# HITACHI

**PA** **No. 0123**

# SERVICE MANUAL

**53SDX89BA**
**60SDX88BA**

NTSC DP86V Chassis

**R/C: CLU-615MP**

This addendum includes all information necessary for the 53SDX89BA/60SDX88BA, EXCEPT information which is the same as the 53SDX89B/60SDX88B. For information not included in this manual, please refer to the 53SDX89B Service Manual PA No. 0122 and 60SDX88B Service Manual PA No. 0113. This addendum only includes Circuit Schematics, PWB films, and Parts List that are different between the 53SDX89B/60SDX88B and 53SDX89BA/60SDX88BA. These differences are due to an additional V-Chip feature which required modification to the Signal PWB, Deflection PWB, and Terminal PWB.

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**CAUTION:** Before servicing this chassis, it is important that the service technician read the “Safety Precaution” and “Product Safety Notices” in this service manual.

**SAFETY NOTICE**
**USE ISOLATION TRANSFORMER WHEN SERVICING**

Components having special safety characteristics are identified by a ⚠ on the schematics and on the parts list in this Service Data and its supplements and bulletins. Before servicing the chassis, it is important that the service technician read and follow the “Safety Precautions” and “Product Safety Notices” in this Service Manual.

*For continued x-radiation protection, replace picture tube with original type or Hitachi approved equivalent type.

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**SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT**

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# PROJECTION COLOR TELEVISION

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**SEPTEMBER 1999** **HHEA-MANUFACTURING**

# SAFETY NOTICE
# USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by a ⚠ on the schematics and on the parts list in this service manual and its supplements and bulletins. Before servicing this chassis, it is important that the service technician read and follow the "Safety Precautions" and the "Product Safety Notices" in this Service Manual.

For continued X-Radiation protection, replace picture tube with original type or Hitachi approved equivalent type.

This Service Manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

## WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health and Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with solder. Also, when soldering do not inhale any smoke or fumes produced.

This television receiver provides display of television closed captioning in accordance with section 15.119 of the FCC rules.

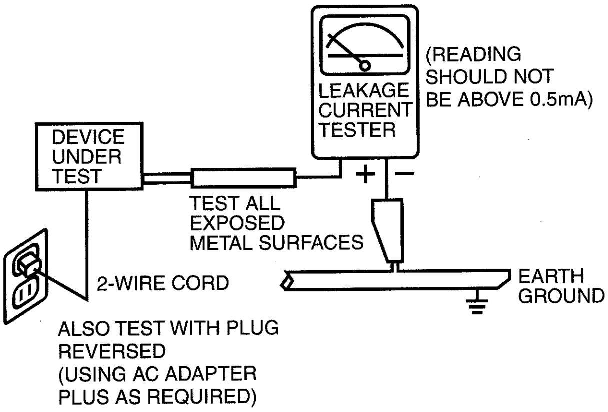
# SAFETY PRECAUTIONS

1. Before returning an instrument to the customer, always make a safety check of the entire instrument, including but not limited to the following items.
   a. Be sure that no built-in protective devices are defective and/or have been deleted during servicing. (1) Protective shields are provided on this chassis to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience. (2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including but not limited to, nonmetallic control knobs, insulating fishpaper, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. **Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damage.**

   b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to (1) spacing between the picture tube and cabinet mask, (2) excessively wide cabinet ventilation slots, and (3) an improperly fitted and/or incorrectly secured cabinet back cover.

   c. **Antenna Cold Check** – With the instrument AC plug removed from any AC source, connect an electrical jumper across the two AC plug prongs. Place the instrument AC switch in the on position. Connect one lead of an ohmmeter to the AC plug prongs tied together and touch the other ohmmeter lead in turn to each tuner antenna input, exposed terminal screw and, if applicable, to the coaxial connector. If the measured resistance is less than 1.0 megohms or greater than 5.2 megohms, an abnormality exists that must be corrected before the instrument is returned to the customer. Repeat this test with the instrument AC switch in the off position.

   d. **Leakage Current Hot Check** – With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.0 Leakage Current for Appliances and Underwriters Laboratories (UL) 1410, (50.7). With the instrument AC switch first in the on position and then in the off position, measure from a known earth ground (metal waterpipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle bracket, metal cabinet, screw heads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milliamps. Reverse the instrument power cord plug in the outlet and repeat test.


LEAKAGE CURRENT TESTER
(READING SHOULD NOT BE ABOVE 0.5mA)
DEVICE UNDER TEST
+
−
TEST ALL EXPOSED METAL SURFACES
2-WIRE CORD
EARTH GROUND
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUS AS REQUIRED)

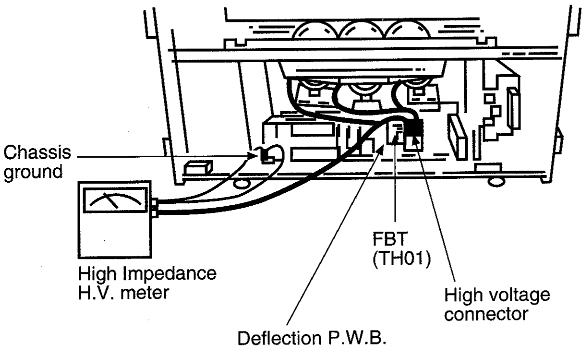
**AC Leakage Test**

**ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER OR BEFORE CONNECTING THE ANTENNA OR ACCESSORIES.**

   e. **High Voltage –** This receiver is provided with a hold down circuit for clearly indicating that voltage has increased in excess of a predetermined value. Comply will all notes described in this Service Manual regarding this hold down circuit when servicing, so that this hold down circuit may correctly be operated.

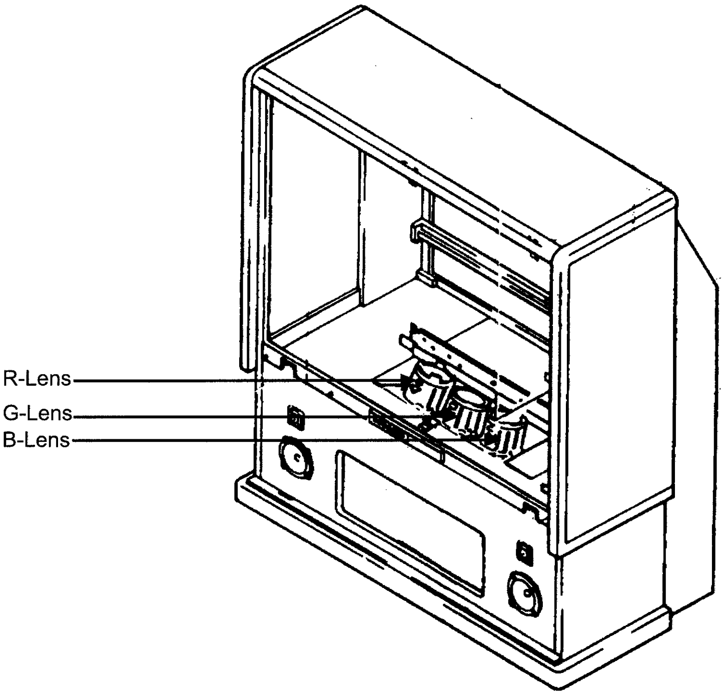
   f. **Service Warning –** With maximum contrast, operating high voltage in this receiver is lower than **33.0 kV.** In case any component having influence on high voltage is replaced, confirm that the high voltage with maximum contrast is lower than **33.0 kV.**
   To measure H.V. use a high impedance H.V. meter. Connect (-) to chassis earth and (+) to the CRT anode button. (See the following connection diagram.)

   **Note:** Turn power switch off without fail before the connection to the anode button is made.



g. **X-radiation – TUBE:** The primary source of X-radiation in this receiver is the picture tube. The tube utilized for the above mentioned function in this chassis is specially constructed to limit X-radiation emissions.
For continued X-radiation protection, the replacement tube must be the same type as the original, Hitachi approved type.
When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, avoid being unnecessarily close to the picture tube and the high voltage component.
Do not operate the chassis longer than is necessary to locate the cause of excessive voltage.

h. **X-radiation Shield –**
   1. This receiver is provided with X-ray shield plates for protection against X-radiation. Do not remove X-ray shield plates A, B, C, or D shown in Fig. 1 unnecessarily, when troubleshooting and/or making test measurements.
   2. To prevent X-radiation, after replacement of picture tube and lens, confirm these components to be fixed correctly to bracket and cabinet, and not to be taken off easily.



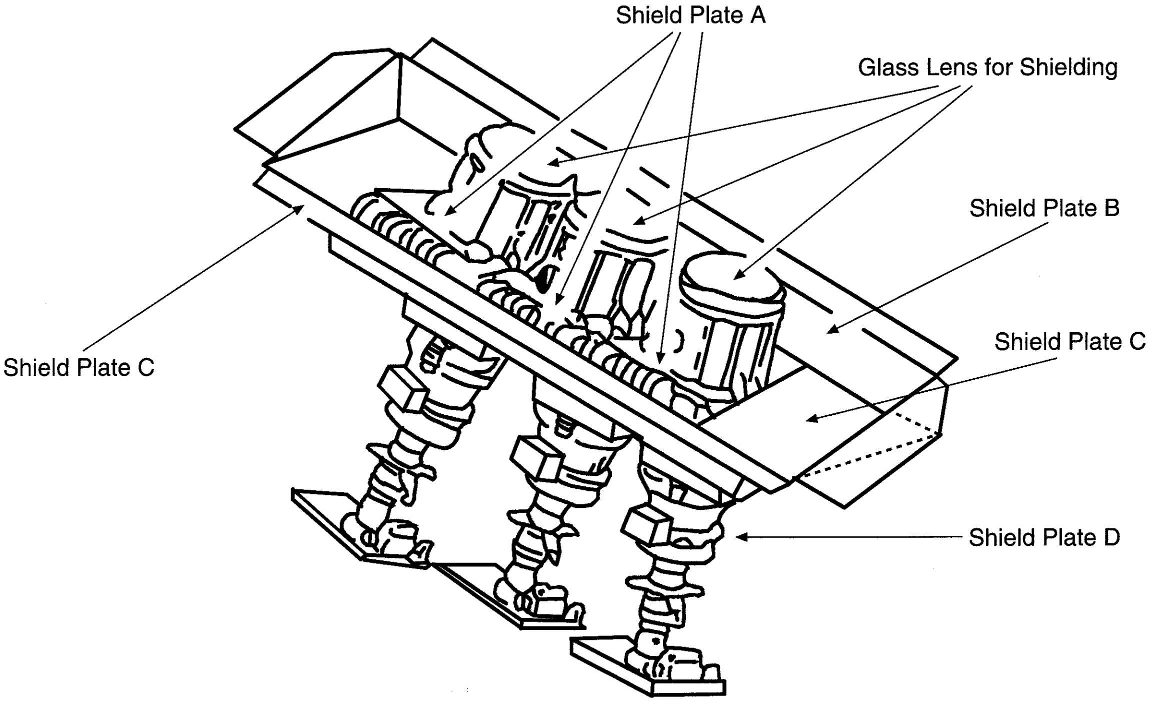


Fig. 1. Detailing X-radiation Shield

2. Read and comply with all caution and safety-related notes on or inside the receiver cabinet, on the receiver chassis, or on the picture tube.

3. **Design Alteration Warning** – Do not alter or add to the mechanical or electrical design of this TV receiver. Design alterations and additions including but not limited to circuit modifications and the addition of items such as auxiliary audio and/or video output connectors, might alter the safety characteristics of this receiver and create a hazard to the user. Any design alterations or additions may void the manufacturer's warranty and may make you, the servicer, responsible for personal injury or property damage resulting therefrom.

4. **Picture Tube Implosion Protection Warning** – The picture tube in this receiver employs integral implosion protection. For continued implosion protection, replace the picture tube only with one of the same type number. Do not remove, install, or otherwise handle the picture tube in any manner without first putting on shatterproof goggles equipped with side shields. People not so equipped must be kept safely away while picture tubes are handled. Keep the picture tube away from your body. Do not handle the picture tube by its neck.

5. **Hot Chassis Warning** – **a.** Some TV receiver chassis are electrically connected directly to one conductor of the AC power cord and may be safely serviced without an isolation transformer only if the AC power plug is inserted so that the chassis is connected to the ground side of the AC power source. Confirm that the AC power plug is inserted correctly with an AC voltmeter by measuring between the chassis and a known earth ground. If a voltage reading in excess of 1.0V is obtained, remove and reinsert the AC power plug in the opposite polarity and again measure the voltage potential between the chassis and a known earth ground. **b.** Some TV receiver chassis normally have 85V AC (RMS) between chassis and earth ground regardless of the AC plug polarity. These chassis can be safely serviced only with an isolation transformer inserted in the power line between the receiver and the AC power source, for both personnel and test equipment protection. c. Some TV receiver chassis have a secondary ground system in addition to the main chassis ground. This secondary ground system is not isolated from the AC power line. The two ground systems are electrically separated by insulating material that must not be defeated or altered.

6. Observe original lead dress. Take extra care to assure correct lead dress in the following areas: **a.** near sharp edges, **b.** near thermally hot parts – be sure that leads and components do not touch thermally hot parts, **c.** the AC supply, **d.** high voltage and **e.** antenna wiring. Always inspect in all areas for pinched, out-of-plate, or frayed wiring. Do not change spacing between components and the printed circuit board. Check AC power cord for damage.

7. Components, parts, and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts, or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

8. **PRODUCT SAFETY NOTICE** – Many TV electrical and mechanical parts have special safety-related characteristics some of which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified in Hitachi service data by shading on schematics and by a ⚠ in the parts list. Use of substitute replacement that does not have the same safety characteristics as the recommended replacement part in Hitachi service data parts list might create shock, fire, and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate. For the latest information, always consult the appropriate current Hitachi service literature. A subscription to, or additional copies of service literature may be obtained at a nominal charge from Hitachi.

# SERVICING PRECAUTIONS

**CAUTION:** Before servicing instruments covered by this service data and its supplements and addenda, read and follow the SAFETY PRECAUTIONS on page 3 of this publication.

**NOTE:** If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

### General Servicing Guidelines

1. Always unplug the instrument AC power cord from the AC power source before:
   a. Removing or reinstalling any component, circuit board, module, or any other instrument assembly.

   b. Disconnecting or reconnecting any instrument electrical plug or other electrical connection.

   c. Connecting a test substitute in parallel with an electrolytic capacitor in the instrument.
   **CAUTION:** A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.

   d. Discharging the picture tube anode.

2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc.) equipped with a suitable high voltage probe. Do not test high voltage by “drawing an arc.” The H.V. Distribution Box has an internal 400MΩ resistor (bleeder resistor) connected from the high voltage to ground. After power is removed from the instrument the high voltage will discharge through the high voltage bleeder resistor. If the tubes have high voltage after power is removed, then the bleeder resistor is defective or the bleeder ground is disconnected.

3. Discharge the picture tube’s anode at any of the R, G, or B outputs on the H.V. Distribution Box only by (a) first connecting one end of an insulated clip lead to the degaussing or kine aquadag grounding system shield at the point where the picture tube socket ground lead is connected, and then (b) touch the other end of the insulated clip lead to the picture tube high voltage distribution box R, G, or B output, using an insulated handle to avoid personal contact with high voltage.

4. Do not spray chemicals on or near this instrument or any of its assemblies.

5. Unless specified otherwise in these service data, clean electrical contracts by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable nonabrasive applicator: 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength).
   **CAUTION:** This is a flammable mixture. Unless specified otherwise in these service data, lubrication of contacts is not required.

6. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service data might be equipped.

7. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat-sinks are correctly installed.

8. Always connect the test instrument ground lead to the appropriate instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

9. Use with this instrument only the test fixtures specified in this service data.
   **CAUTION:** Do not connect the test fixture ground strap to any heatsink in this instrument.

### Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor “chip” components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.

2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

3. Use only a grounded-tip soldering iron to solder or desolder ES devices.

4. Use only can anti-static type solder removal device. Some solder removal devices not classified as “anti-static” can generate electrical charges sufficient to damage ES device.

5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.

6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material.)

7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   **CAUTION:** Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

### General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range 500°F to 600°F.

2. Use an appropriate gauge of resin-core solder composed of 60 parts tin/40 parts lead.

3. Keep the soldering iron tip clean and well-tinned.

4. Thoroughly clean the surfaces to be soldered. Use a small wire-bristle (0.5 inch or 1.25 cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.

5. Use the following desoldering technique.
   a. Allow the soldering iron tip to reach normal temperature (500°F to 600°F).

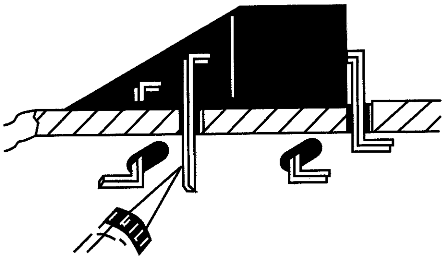
   b. Heat the component lead until the solder melts. Quickly draw away the melted solder with an anti-static, suction-type solder removal device or with solder braid.
   **CAUTION:** Work quickly to avoid overheating the circuit board printed foil.

6. Use the following soldering technique.
   a. Allow the soldering iron tip to reach normal temperature (500°F to 600°F).

   b. First, hold the soldering iron tip and solder strand against the component lead until the solder melts.

   c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
   **CAUTION:** Work quickly to avoid overheating the circuit board printed foil or components.

   d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.



Use Solding Iron to Pry Leads

### IC Removal/Replacement

Some Hitachi unitized chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.

2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

### Replacement

1. Carefully insert the replacement IC in the circuit board.

2. Carefully bend each IC lead against the circuit foil pad and solder it.

3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to areas.)

### "Small-signal" Discrete Transistor Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.

2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.

3. Bend into a "U" shape the replacement transistor leads.

4. Connect to replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact, then solder each connection.

### Power Output Transistor Devices Removal/Replacements

1. Heat and remove all solder from around the transistor leads.

2. Remove the heatsink mounting screw (if so equipped).

3. Carefully remove the transistor from the circuit board.

4. Insert new transistor in circuit board.

5. Solder each transistor lead, and clip off excess lead.

6. Replace heatsink.

### Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.

2. Bend the two remaining leads perpendicularly to the circuit board.

3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.

4. Securely crimp each connection and solder it.

5. Inspect (on the circuit board copper side) the solder joints of the two "original leads". If they are not shiny, reheat them and, if necessary, apply additional solder.

**Fuses and Conventional Resistor Removal/Replacement**

1. Clip each fuse or resistor lead at top of circuit board hollow stake.

2. Securely crimp leads of replacement component around stake 1/8 inch from top.

3. Solder the connections.
   **CAUTION:** Maintain original spacing between the replaced component and adjacent components and the circuit board, to prevent excessive component temperatures.

**Circuit Board Foil Repair**

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board, causing the foil to separate from, or "lift-off," the board. The following guidelines and procedures should be followed whenever this condition is encountered.

In Critical Copper Pattern Areas

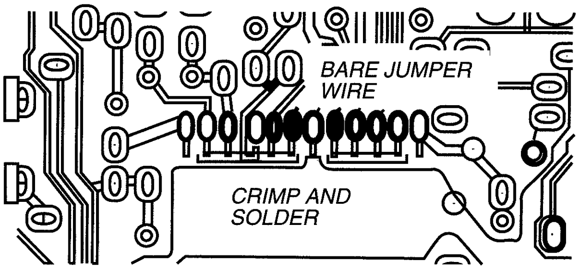
High component/copper pattern density and/or special voltage/current characteristics make the spacing and integrity of copper pattern in some circuit board areas more critical than in others. The circuit foil in these areas is designated as Critical Copper Pattern. Because Critical Copper Pattern requires special soldering techniques to ensure the maintenance of reliability and safety standards, contact your Hitachi personnel.

At IC Connections

To repair defective copper pattern at IC connections, use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections.)

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary.)

2. Carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.



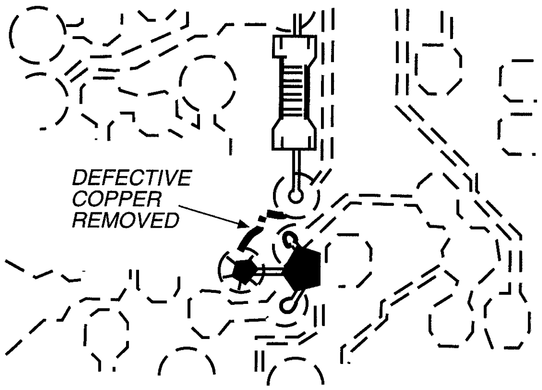
**Install Jumper Wire and Solder**

3. Bend a small "U" in one end of a small-gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.

4. Route the jumper wire along the path of the cut-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area, and clip off any excess jumper wire.

At Other Connections

Use the following technique to repair defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.



**Insulated Jumper Wire**

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure hazardous condition will not exist if the jumper wire opens.

2. Trace along the copper pattern from both wire sides of the pattern break and locate the nearest component directly connected to the affected copper pattern.

3. Connect insulated 20-gauge jumper wire from the nearest component on one side of the pattern break to the lead of the nearest component on the other side. Carefully crimp and solder the connections.
   **CAUTION:** Be sure the insulated jumper wire is dressed so that it does not touch components or sharp edges.

**Frequency Synthesis (FS) Tuning Systems**

1. Always unplug the instrument AC power cord before disconnecting or reconnecting FS tuning system cables and before removing or inserting FS tuning system modules.

2. The FS tuner must never be disconnected from the FS tuning control module while power is applied to the instrument.

3. When troubleshooting intermittent problems that might be caused by defective cable connection(s) to the FS tuning system, remove the instrument AC power as soon as the defective connector is found and finish confirming the bad connection with a continuity test. This procedure will reduce the probability of electrical overstress of the FS system semi-conductor components.

**NOTE:** ***These components are affixed with glue. Be careful not to break or damage any foil under the component or at the pins of the ICs when removing. Usually applying heat to the component for a short time while twisting with tweezers will break the component loose.***

## Leadless Chip Components (surface mount)

Chip components must be replaced with identical chips due to critical foil track spacing. There are no holes in the board to mount standard transistors or diodes. Some chip capacitor or resistor board solder pads may have holes through the board, however the hole diameter limits standard resistor replacement to 1/8 watt. Standard capacitors may also be limited for the same reason. It is recommended that identical chip components be used. .

Chip resistors have a three digit numerical resistance code -1st and 2nd significant digits and a multiplier. Example: 162 = 1600 or 1.6K resistor, 0 = 0 (jumper).

Chip capacitors generally do not have the value indicated on the capacitor. The color of the component indicates the general range of the capacitance.

Chip transistors are identified by a two letter code. The first letter indicates the type and the second letter, the grade of transistor.

Chip diodes have a two letter identification code as per the code chart and are a dual diode pack with either

common anode or common cathode. Check the parts list for correct diode number.

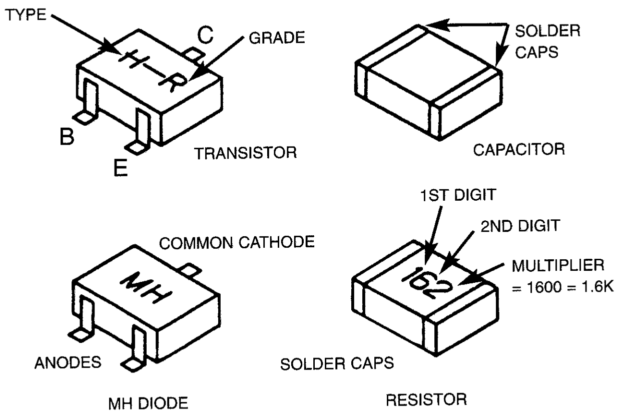
## Component Removal

1. Use solder wick to remove solder from component end caps or terminals.
2. Without pulling up, carefully twist the component with tweezers to break the adhesive.
3. Do not reuse removed leadless or chip components since they are subject to stress fracture during removal .

## Chip Component Installation

1. Put a small amount of solder on the board soldering pads.
2. Hold the chip component against the soldering pads with tweezers or with a miniature alligator clip and apply heat to the pad area with a 30 watt

**Chip Components**

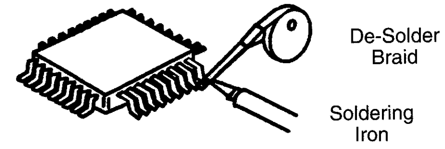

TYPE
C
GRADE
H-R
B
E
TRANSISTOR
SOLDER CAPS
CAPACITOR
COMMON CATHODE
MH
ANODES
MH DIODE
1ST DIGIT
2ND DIGIT
162
MULTIPLIER
= 1600 = 1.6K
SOLDER CAPS
RESISTOR

## How to Replace Flat-IC

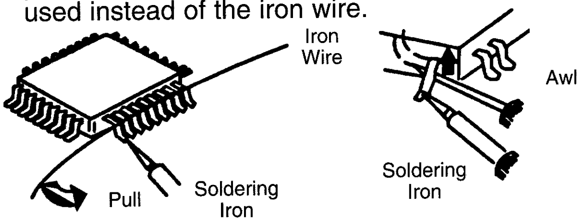
## —Required Tools—

- Soldering iron
- De-solder braids
- iron wire or small awl
- Magnifier

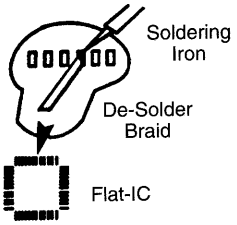
1. Remove the solder from all of the pins of a Flat-IC by using a de-solder braid.


De-Solder Braid
Soldering Iron

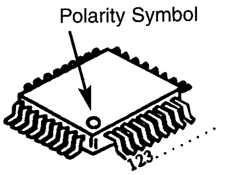
2. Put the iron wire under the pins of the Flat-IC and pull it in the direction indicated while heating the pins using a soldering iron. A small awl can be used instead of the iron wire.


Iron Wire
Awl
Pull
Soldering Iron
Soldering Iron

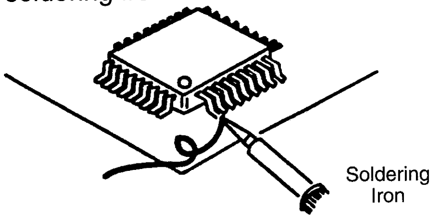
3. Remove the solder from all of the pads of the Flat-IC by using a de-solder braid.


Soldering Iron
De-Solder Braid
Flat-IC

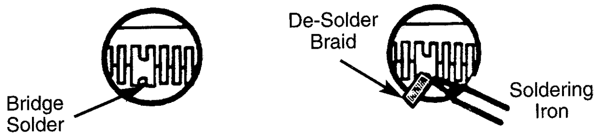
4. Position the new Flat-IC in place (apply the pins of the Flat-IC to the soldering pads where the pins need to be soldered). Properly determine the positions of the soldering pads and pins by correctly aligning the polarity symbol.


Polarity Symbol
123

5. Solder all pins to the soldering pads using a fine tipped soldering iron.


Soldering Iron

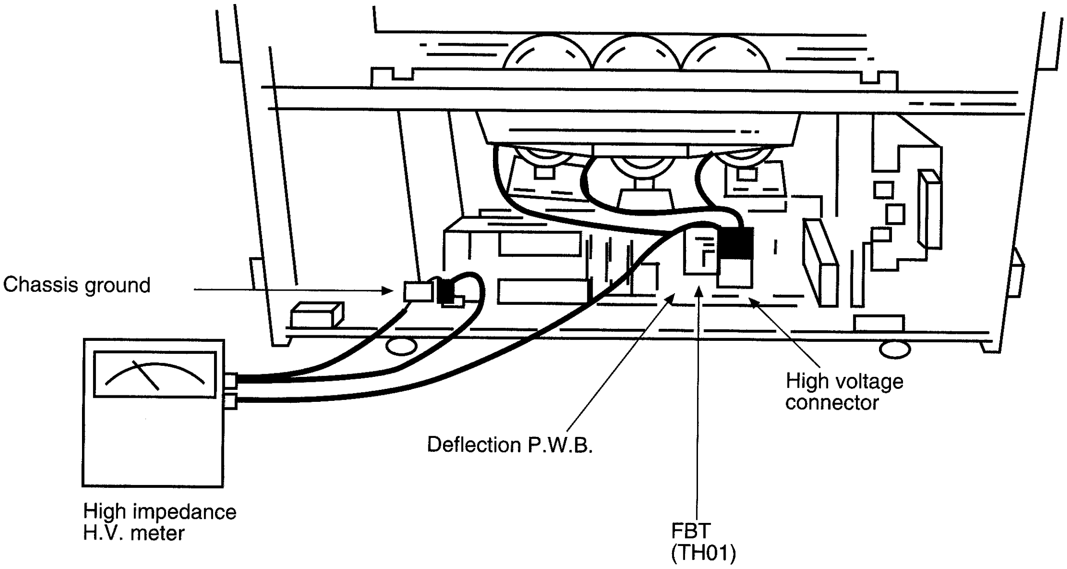
6. Check with a magnifier for solder bridge between the pins or for dry joint between pins and soldering pads. To remove a solder bridge, use a de-solder braid as shown in the figure below.

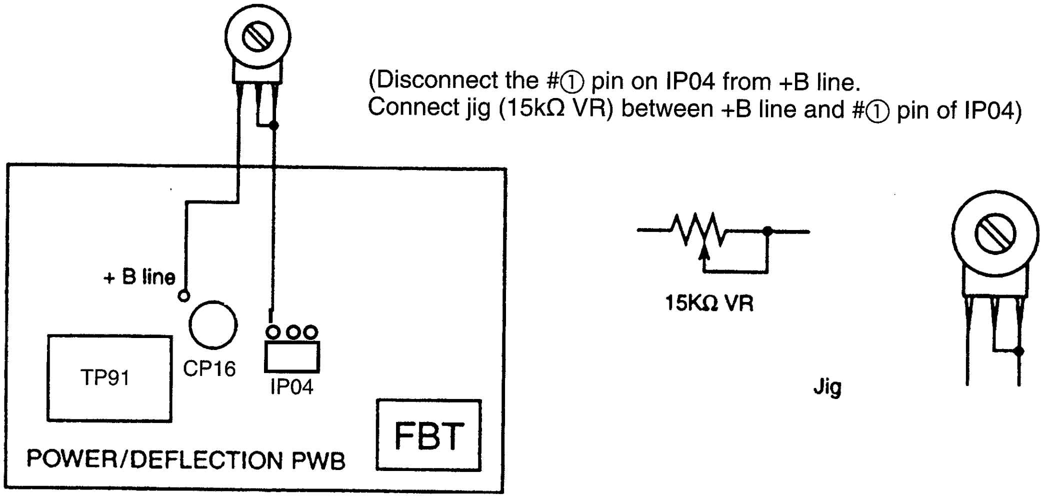

Bridge Solder
De-Solder Braid
Soldering Iron

# TECHNICAL CAUTIONS

**High Voltage limiter circuit operation check.**

1. Turn off TV and connect jig as shown in Figure 2. Adjust jig fully counter-clockwise for minimum resistance.
2. Set the AC input to 120V AC and turn on TV.
3. Confirm test pattern on CRT is a usable picture, then slowly adjust jig until the picture disappears and TV shuts down.
4. When the limiter circuit is operating properly, High Voltage will be less than 36.5 kV at 0.6mA when TV shuts down.
5. Turn off set immediately after checking circuit operation.
6. Unplug set for one minute to reset shutdown circuit. Remove jig and voltmeter.


Chassis ground
High voltage connector
Deflection P.W.B.
High impedance H.V. meter
FBT (TH01)


+ B line
TP91
CP16
IP04
FBT
POWER/DEFLECTION PWB
15KΩ VR
Jig

(Disconnect the #① pin on IP04 from +B line.
Connect jig (15kΩ VR) between +B line and #① pin of IP04)

Fig. 2. Deflection/Power P.C.B.

# SPECIFICATIONS

**Model:** 53SDX89BA
60SDX88BA

**Cathode-Ray Tube:**

UE04511: R=P16LFT00RFA
UE04512: G=P16LFT00HLA
UE04513: B=P16LFT00BMB

**Power Input:** 120 volts AC, 60 Hz

**Power Consumption:** 290 Watts - Maximum
245 Watts - Operating

**Antenna Impedance:** 75 Ohm Unbalanced
VHF / UHF / CATV

**Receiving Channel:**

| BAND | CH |
|---|---|
| VHF | 2~13 |
| UHF | 14~69 |
| EXT. Mid | (A-5)~(A-1), 4+ |
| CATV Mid. | A~I |
| CATV Super | J~W |
| CATV Hyper | (W+1)~(W+28) |

**Intermediate Frequency:** Picture I-F Carrier 45.75 MHz
Sound I-F Carrier 41.25 MHz
Color Sub Carrier 42.17 MHz

**Video Input:**

| | |
|---|---|
| Composite | 1 Volt p-p, 75 Ohm |
| Component | 1 Volt p-p, 75 Ohm (Y) |
| Component | 0.7 Volt p-p, 75 Ohm, (Cb, Cr) |

**Video Output:** 1 Volt p-p, 75 Ohm

**Audio Input:** 470 mVrms, 47 k Ohm

**Stereo Audio Output:** 470 mVrms, 1 k Ohm

**Audio Output Power:**

Front: 15 Watts per channel at 10% distortion, 8 Ohm impedence. Max. output - 18 Watts.
Rear: 7.5 Watts per channel at 10% distortion, 8 Ohm impedence. Max output - 10 Watts.
Center: 7.5 Watts per channel at 10% distortion, 8 Ohm impedence. Max output - 10 Watts

**Anode Voltage** 31.5 kV (Zero Beam Current)

**Brightness:** 53SDX89BA - 240 cd/m$^2$
60SDX88BA - 180 cd/m$^2$
(white screen)

**Speakers:** 2 Woofers - 5 inch (12 mm) round
2 Tweeters - 2 inch (5 mm) round
2 Center Speakers - 4 inch (10 mm) round

**Dimension:**

| | **53SDX89BA** | **60SDX88BA** |
|---|---|---|
| Height (in.) | 55 3/4 | 60 7/16 |
| Width (in.) | 46 | 51 3/8 |
| Depth (in.) | 26 1/4 | 27 1/2 |
| Weight (lbs.) | 200 | 255 |

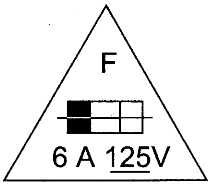
**Circuit Board Assemblies:**

- C.P.T. (B) P.W.B.
- C.P.T. (G) P.W.B.
- C.P.T. (R) P.W.B.
- Audio Out P.W.B.
- 2 H P.W.B.
- Sub-Power P.W.B.
- Signal P.W.B.
- Terminal P.W.B.
- VM P.W.B.
- Surround P.W.B.
- Power/Deflection P.W.B.
- Control P.W.B.
- Control Sub P.W.B.
- Sensor Distribution P.W.B.
- Sub Deflection P.W.B.

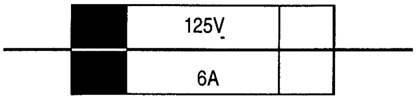
# CIRCUIT PROTECTION

**CAUTION:** Below is an EXAMPLE only. See Replacement Parts List for details. The following symbol near the fuse indicates fast operation fuse (to be replaced). Fuse ratings appear within the symbol.

Example:



"RISK OF FIRE - REPLACE FUSE AS MARKED"

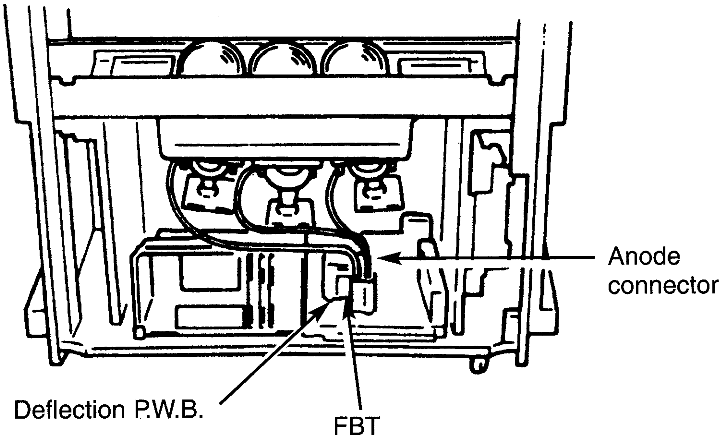


F901

The rating of fuse F901 is 6.0A - 125V.
Replace with the same type fuse for continued protection against fire.

# CAUTIONS WHEN CONNECTING / DISCONNECTING THE HV CONNECTOR

Perform the following when the HV connector (anode connector) is removed or inserted for CPT replacement, etc.


Anode connector
Deflection P.W.B.
FBT

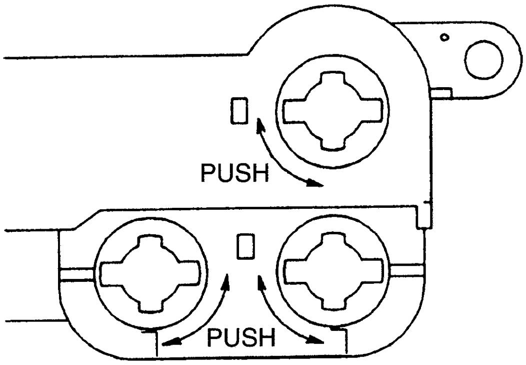


**Fig. A**

**During Removal**

1. Roll out silicon cover from FBT's contact area slowly.
2. While turning the connector about 90 degrees following the arrow (0 position), push the connector slightly towards the case. (Fig. A)
3. Remove the connector slowly by pulling it away from the case.

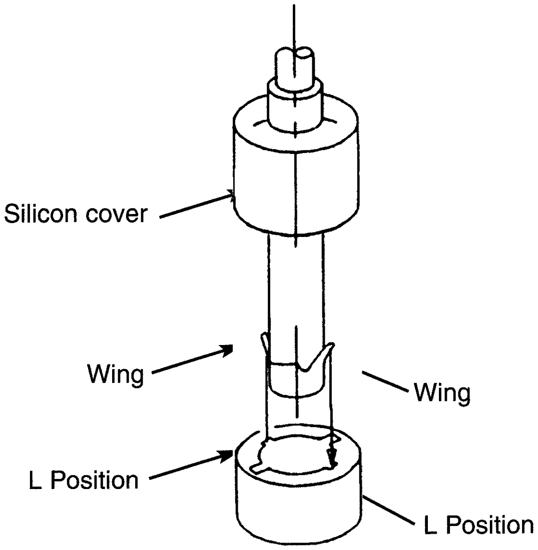
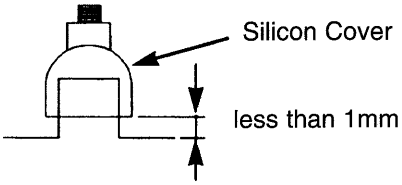

Silicon cover
Wing
Wing
L Position
L Position

**Fig. B**

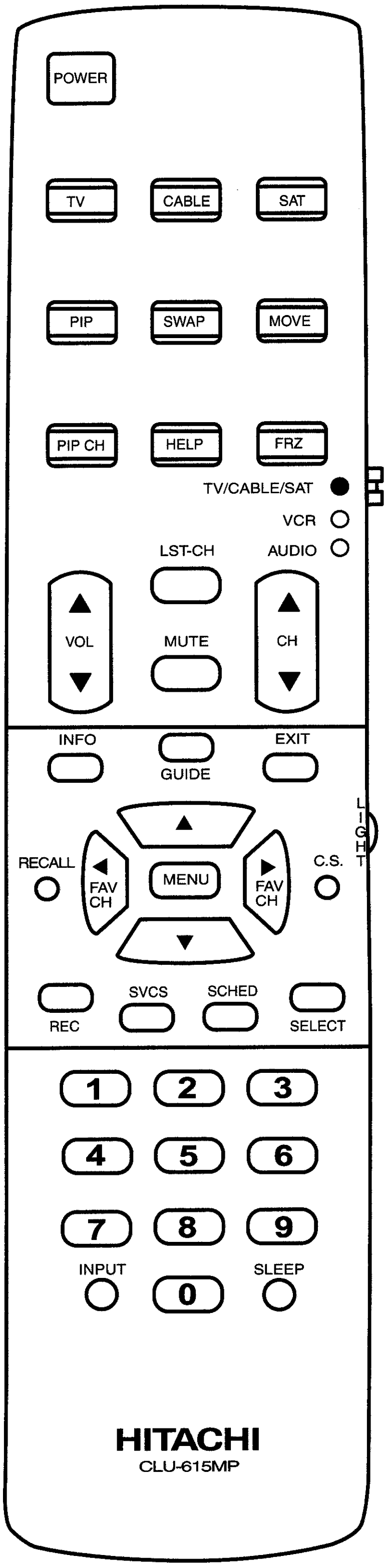
**During Insertion**

1. Please refer to direction for insertion as shown in Fig. B (L position). Insert connector until "CLICK" sound is heard.
2. Make sure the connector is pressed right in, so that it has a good contact with the spring.
3. Confirm the contact by pulling the connector slightly. (Don't pull hard because it may damage the connector).
4. Cover the high voltage output by carefully pushing silicon cover onto it. (Don't turn the connector).

(REMARK)
1. Make sure the silicon cover is covering the high voltage output.


Silicon Cover
less than 1mm

# THE REMOTE TO CONTROL YOUR TV


POWER
TV
CABLE
SAT
PIP
SWAP
MOVE
PIP CH
HELP
FRZ
TV/CABLE/SAT
VCR
AUDIO
LST-CH
VOL
MUTE
CH
INFO
GUIDE
EXIT
LIGHT
RECALL
FAV CH
MENU
FAV CH
C.S.
SVCS
SCHED
REC
SELECT
1
2
3
4
5
6
7
8
9
INPUT
0
SLEEP
HITACHI
CLU-615MP

# NOTES:

## I. Adjustment Procedure

All adjustments for the 53SDX89BA/60SDX88BA (DP86V chassis) are the same as the 53SDX89B/60SDX88B (DP86 chassis) service manual PA No. 0122 and PA No. 0113. The only difference is the $I^2C$ Memory Initialize page.

## II. Circuit Schematics, PWB films, and Parts List

There are minor differences between the non-V-Chip model 53SDX89B/60SDX88B (DP86 chassis) and the V-Chip model 53SDX89BA/60SDX88BA (DP86V chassis). These differences are in the Signal, Deflection and Terminal circuitry. Refer to this manual regarding circuit schematics, PWB films, and Parts List regarding these three circuitries. Refer to service manual PA No. 0113 and PA No. 0122 for other information.

# 1. ASSEMBLED P.W.B. ADJUSTMENT

## 1.1 Memory Initialization

Adjustment procedure

(1) Press INPUT key on Control Panel and then Power On to access I²C adjustment mode.

(2) Receive signal on main picture. (NTSC, SDTV, or HDTV).

Some menu pages have I²C adjustments for SDTV and HDTV. The set will automatically allow you to set these items only when a SDTV or HDTV signal is input to the COMPONENT jacks on the back of the TV. See table below.

| | SIGNAL | ASPECT | fH | COLOR |
|---|---|---|---|---|
| HDTV | 1080I | 16:9 | 33.75kHz | Y Pb Pr |
| SDTV | 480P | 4:3 | 31.5 kHz | Y Cb Cr |
| NTSC | 480I | 4:3 | 15.75kHz | Y Cb Cr |

(3) Check the OSD according to table below, using ▲▼ buttons on Remote Control.

*: Adjustable Data

Others: Fixed data (be careful not to change)

(4) Press MENU key to exit I²C ADJUST mode.

**NOTE:** (1) If there is a different value than shown in table above, for fixed data, adjust it using ◀▶ buttons (only in this case).

(2) When exchanging microprocessor and TV is turned on for first time, it requires initialization of Memory Initial on Page 1 of I²C adjustment menu page.

(3) FIRST TIME TOUR can be turned off at first power ON by pressing MENU while FIRST TIME TOUR is running.

FACTORY ADJUSTMENT MODE

| | | | |
|---|---|---|---|
| | MEMORY INIT | ☐ | |
| | DEF RESET | ☐ | |
| | UPC1885 | 315 | 3375 |
| * | H POSITION | 40 | 3F |
| | V POSITION | 3F | 3F |
| * | H SIZE | 29 | 45 |
| * | V SIZE | 3B | 3D |
| * | SIDE PIN | 0B | 0F |
| * | TRAPEZOID | 1F | 1D |

| | UPC 1885 | 315 | 3375 |
|---|---|---|---|
| | H FREQ | 6 | 6 |
| | H SEN | 1F | 1F |
| * | H F/V | F5 | F1 |
| | H DUTY | F | F |
| | VS LIN | F | F |
| | VC LIN | F | F |
| | VO SIZE | 1F | 1B |
| | V CHIP | | |
| | POLLING | F | F |
| | TIME OUT | 5 | 5 |
| | STATUS | 2 | 2 |

| | |
|---|---|
| V/C RESET | ☐ |
| SERVICE | ☐ |
| SUB BRT | ☐ |
| 3DYC RESET | ☐ |
| PIP RESET | ☐ |
| H POSITION | 7B |
| V POSITION | 0C |
| TA1270 | |
| PIP TINT | 3E |
| PIP CNT | 0D |
| PIP CLR | 10 |
| FLEX RESET | ☐ |

| TA1276 | NTSC | SDTV | HDTV |
|---|---|---|---|
| SHARP | 3A | 3A | 3A |
| COLOR | 3A | 40 | 3A |
| TINT | 48 | 38 | 38 |
| R-Y PH | 2 | 2 | 0 |
| R/B GA | 1 | 2 | 3 |
| G-Y PH | 1 | 1 | 2 |
| G/B GA | 0 | 0 | 0 |
| APACON | 7 | 7 | 5 |

| TA1276 | |
|---|---|
| G DRV | 3A |
| B DRV | 31 |
| RGB BRT | 50 |
| RGB CNT | 50 |
| SUB CNT | 1A |
| VSM PH | 3 |
| VSM GA | 0 |
| CLR G | 3 |
| CLT | 0 |
| OS ACL | 1 |
| TX ACL | 0 |

| TA1276 | |
|---|---|
| BSP | 3 |
| APL/BS | 0 |
| S-TRK | 0 |
| B COR | 1 |
| B GA | 0 |
| B DET | 0 |
| DABL PN | 0 |
| DABL GH | 7 |
| ABL PN | 4 |
| ABL GA | 4 |

| FLEX CONT | NTSC | SDTV | HDTV |
|---|---|---|---|
| CORE H | 0 | 0 | 1 |
| CORE V | 0 | 0 | 1 |
| ENH H | 0 | 0 | 2 |
| ENH V | 2 | 2 | 2 |
| ENH SEL | 1 | 1 | 1 |
| LOCA HD | 1F | 1F | 1F |
| LOCA VD | 1F | 1F | 1F |

| FLEX CONT | |
|---|---|
| Y/C DELAY | 75 |
| BBLK LEVEL | 4 |
| RBLK LEVEL | 3 |
| MSK STR | 7 |
| MSK END | 7 |
| PLL MSK | 1 |
| MSK POL | 1 |
| PNL BRT | 5F |

FLEX CONT

| | NTSC | SDTV | HDTV |
|---|---|---|---|
| PLL H | 7 | 7 | 7 |
| MSK H | 7F | 7F | 7F |
| MSK V | 7F | 7F | 7F |
| VT POS | 7F | 7F | 7F |
| VB POS | 7F | 7F | 7F |
| HR POS | 7F | 7F | 7F |
| HL POS | 7F | 7F | 7F |
| V COMP | 7 | 7 | 7 |
| V IND | 7 | 7 | 7 |
| PNL T | 7 | 7 | 7 |
| PNL B | 7 | 7 | 7 |

TA1276

| | |
|---|---|
| BACK P | 2 |
| VPK LMT | 0 |
| CLR FREQ | 03 |
| TC90A17 | |
| PLL W | 0 |
| PLL R | 0 |
| I CLP | 6 |
| Q CLP | 6 |
| Y CLP | 40 |

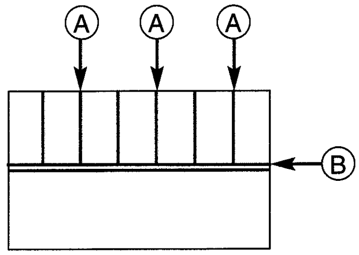
### 1.2 Comb filter operation check

Adjustment preparation

(1) Receive the color bar signal at the regular tuning point.
(2) Set the CONTRAST control to MAX and the other controls to center.
(3) Set the AI to OFF, and 3D Y/C to ON in Advanced Settings.

Adjustment procedure

(1) Check that between the color bars there are not line dots every second color bar as shown in the drawing.



Check Ⓐ and Ⓑ line dots.

| | DP86V |
|---|---|
| Ⓐ | No Dots |
| Ⓑ | No Dots |

### 1.3 Surround Check

Adjustment preparation

(1) Input the following audio signals to the audio input of the VIDEO INPUT terminals.

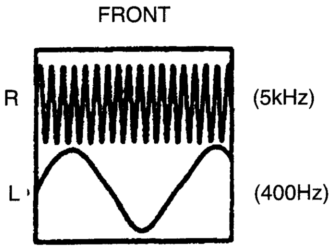
- When checking surround:
  ① L CH: 400 Hz sine wave, 475mVrms
  ② R CH: 5kHz sine wave, 475mVrms
- Set the AUDIO ADVANCED SETTING for INT. SPEAKERS ON,DYNAMIC BASS OFF, LOUDNESS OFF and PERFECT VOLUME OFF.
- Set the volume control of FRONT, CENTER, and REAR to around the center.
- Set the BASS, TREBLE and BALANCE to center.

**Note:** Front waveform: Front speaker output of the set.
Rear wavefrom: Rear speaker output of the set.
Center waveform: Center speaker output of the set.

### 1.3.1 Surround off check

Adjustment procedure

(1) Set to SURROUND: OFF and check that the waveform shown below is obtained (Input signal ① and ② ).

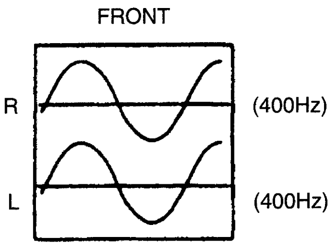


**Note:** The rear and center will have no output.

### 1.3.2 Surround off/monaural check

Adjustment procedure

Check that the following waveform is obtained. The amplitudes of 2 channels are equal.
(Input signal ① only-L mono input).



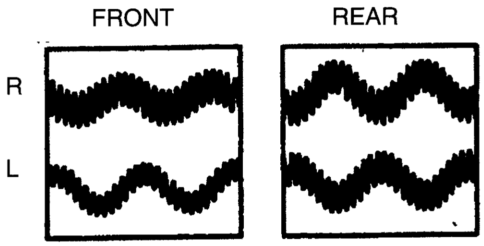
**Note:** Monaural check can be omitted. The rear and center have no output.

### 1.3.3 Matrix surround check

Adjustment procedure

(1) Set to SURROUND: MATRIX
- Check that the following waveforms are obtained. (Input signal ① and ② ).

- Front: Check that the phases of R and L are different and 400Hz is superimposed on 5kHz. The amplitudes of R and L are different.
- Rear: Check that the phases of R and L are opposite and 400Hz is superimposed on 5kHz. The amplitudes of R and L are different.

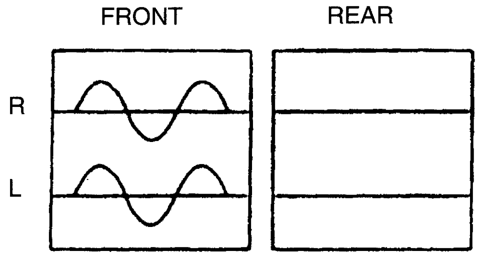


**Note:** Center has no output.

### 1.3.4 Matrix surround/monaural check

Adjustment procedure

- Check that the following waveforms are obtained. (Input signal ① only-L mono input).
- Front: R and L waveforms are almost equal.
- Rear: R and L waveforms are almost Zero.



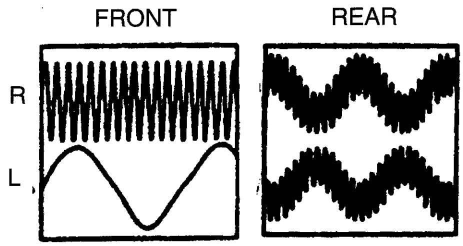
**Note:** Center has no output.

### 1.3.5 Hall surround check

Adjustment procedure

(1) Set to SURROUND: HALL. (Input signal ① and ②).

- Front: Check that the phases of R and L signals are different and 400 Hz is superimposed on 5kHz.
- Rear: Check that the R and L are opposite and 400Hz is superimposed on 5kHz. The R and L amplitudes are equal.

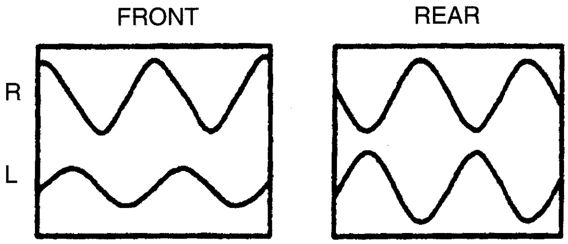


**Note:** Amplitude levels of front R and L are not even depending on P.W.B. Center has no output.

### 1.3.6 Hall surround/monaural check

Adjustment procedure

- Check that the following waveforms are obtained. (Input signal ① only-L mono input).
- Front: The phases of R and L are different. The amplitudes are different.
- Rear: The phases of R and L are opposite.



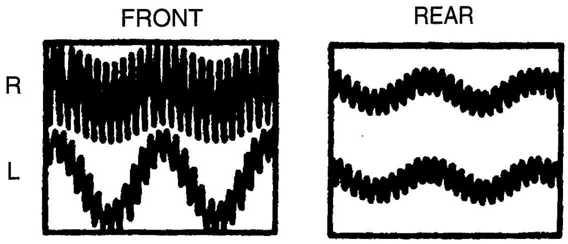
**Note:** Center has no output.

### 1.3.7 Dolby surround check

Adjustment procedure

(1) Set to SURROUND:DOLBY-PRO LOGIC-NORMAL

- Check that the following waveforms are obtained. (Input Signal ① and ②)
- Front: 400 Hz is superimposed on 5kHz.
- Rear: R and L are the same signal and 400Hz is superimposed on 5kHz.



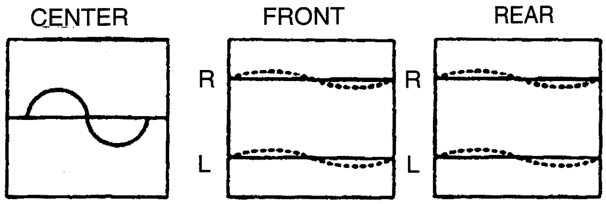
**Note:** MODE: PRO LOGIC (NORMAL)

### 1.3.8 Dolby surround/monaural check

Adjustment procedure

(1) Set to SURROUND: DOLBY-PRO LOGIC-NORMAL

- Check that the following waveforms are obtained. (Input signal ① only-L mono input).
- Front: Almost no output from both R and L.
- Center: Same as the audio input signal.
- Rear: Almost no output from both R and L.



⚠ **Important:** High Voltage adjustment and Horizontal Drive Frequency adjustment should NOT be adjusted in field. These are adjusted at factory using precise loads and should NOT be readjusted.

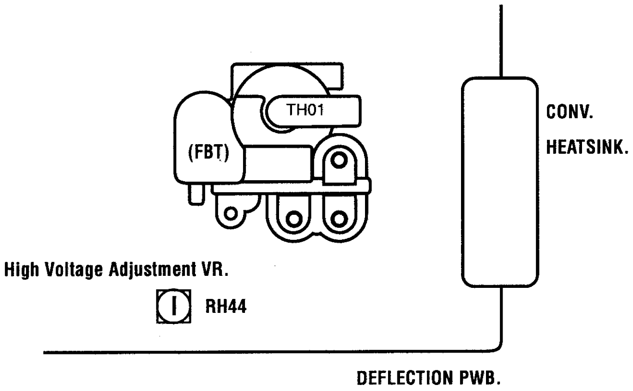
### 1.4 High Voltage Adjustment (should NOT be readjusted in field).

Adjustment preparation

(1) Connect High Voltage meter between FBT High Voltage output. Connect GND of High Voltage meter to CPT GND or FBT GND.
(2) Check that High Voltage adjustment VR (RH44) is counter-clockwise fully (located behind FBT on DEFLECTION PWB).
(3) Receive color bar signal.
(4) VIDEO control should be reset.

Adjustment procedure

(1) Adjust High Voltage to following spec. by turning VR RH44 clockwise slowly. (This should never need adjustment).
ADJ. SPEC = 31. 5kV +/-0. 5kV
(2) After adjustment, fix VR RH44 by Silicone glue (KE40RTV).



### 1.5 Horizontal Drive Frequency Adjustment (should NOT be readjusted in field).

Adjustment preparation

(1) Connect frequency counter to PDD1 connector 7pin & PDD1 3, 4, 6 or 10pin (GND).
(2) VIDEO control should be reset.

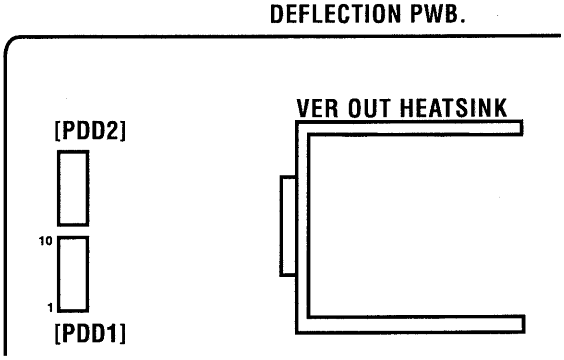
Adjustment procedure

**NTSC MODE**

(1) Receive NTSC color bar signal.
(2) Short between PDD 1 connector 7pin & PDD1 3, 4, 6 or 10pin (GND).
(3) Go to $I^2C$ ADJ. mode by holding INPUT key on front panel, then pressing POWER button.
(4) Choose [H. F. V.] item of $I^2C$ ADJ items.
(5) Adjust HOR. DRIVE frequency to follwing spec. by changing value of [H. F. V.] (This should never need adjustment).
ADJ. SPEC. = 31. 5kHz +/-0. 25kHz.

**HD MODE**

(1) Input HD (1080I fH=33. 75kHz) signal to INPUT 2 component terminal.
(2) Short between PDD 1 connector 7pin & PDD1 3, 4, 6 or 10pin (GND).
(3) Go to $I^2C$ ADJ. mode by holding INPUT key on front panel, then pressing POWER button.
(4) Choose [H. F. V.] item of $I^2C$ ADJ items.
(5) Adjust HOR. DRIVE frequency to following spec. by changing value of [H. F. V]. (This should never need adjustment).
ADJ. SPEC. = 33. 75kHz +/-0. 25kHz.



## 2. FINAL ASSEMBLY ADJUSTMENT

### 2.1 Cut Off Adjustment

Adjustment preparation

(1) Set R and G drive VR's on CPT P.W.B. to center.
(2) Adjust screen VR's on Focus Pack fully counterclockwise.
(3) Adjust Focus VR's on Focus Pack fully clockwise.
(4) Set video conditions to factory reset.
(5) The vertical incident illumination on the screen should be 20 lux or less (room should be dark).

Adjustment procedure

(1) Press INPUT key on control panel and then POWER ON to access $I^2C$ adjustment mode.
(2) Choose "SERVICE" item from $I^2C$ adjustment menu by pressing cursor ▶.
(3) Screen VR should be turned clockwise gradually and set so that retrace line begins to appear.
(4) Return to "NORMAL" mode by cursor ▶ again.
(5) Adjust Focus VR's so that focus is even all around screen.

### 2.2 DCU Cross Hatch Phase Setting

Adjustment preparation

(1) Cut off adjustment should finished.
(2) Set video conditions to factory reset.

Adjustment procedure

**PROGRESSIVE MODE**

(1) Receive any NTSC signal.
(2) Push "SERVICE ONLY" SW on DEFLECTION PWB. (Going to DCU ADJ. mode).

(3) Push HELP key on R/C. (Green cross hatch is displayed).
Then push EXIT key on R/C. (Character pattern is displayed. This is the PHASE setting mode).

(4) Set PH-H phase data as shown below by using 4 and 6 key on R/C.

(5) Set PH-V phase data as shown below by using 2 and 5 key on R/C.

(6) Set CR-H phase data as shown below by using ◀ and ▶ key on R/C.

(7) Set CR-V phase data as shown below by using ▲ and ▼ key on R/C.

(8) Push HELP key on R/C to exit from the PHASE mode.

(9) Push MOVE key 2 times on R/C to write the phase data to memory.

(10) When Green dots are displayed, push MUTE key to return to DCU ADJ. mode.

(11) Push "SERVICE ONLY" SW to return to RF or VIDEO mode.

**HD MODE**

(12) Receive any HD signal (Set to video: 2 mode w/ HD input to component jacks).

(13) Repeat steps (2) ~(11) above.

**PROGRESSIVE MODE**

PHASE MODE

PH-H: BD
PH-V: 0D
CR-H: 4C
CR-V: 00

**HD MODE**

PHASE MODE

PH-H: BD
PH-V: 06
CR-H: 4C
CR-V: 0C

## 2.3 Raster Tilt adjustment (Deflection yoke)

Adjustment preparation

(1) The set can face east or west.

(2) Input the single cross test signal.

(3) Set video conditions to factory reset.

(4) The lens focus adjustment should have been coarse adjusted.

(5) The electric focus should have been coarse adjusted.

(6) The digital convergence RAM should be cleared (uncorrected state). With the TV set off, press and hold the service switch located on the Power/Deflection PWB and then press the power button.

(7) Start adjustment 20 minutes or more after TV is turned on.

Adjustment procedure

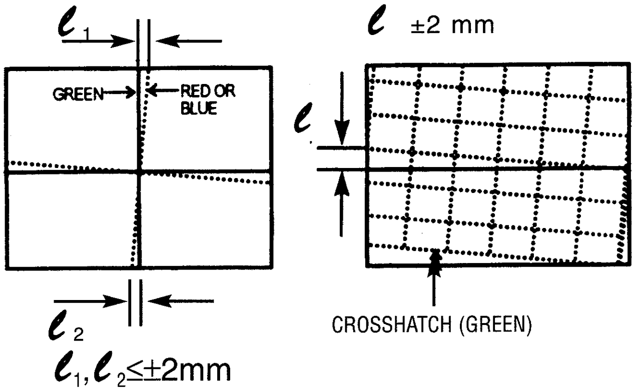
(1) Apply covers to the R and B lenses and project only green light.

(2) Turn the G deflection yoke and adjust the vertical raster inclination.

(3) Then, remove the cover of R or B lens and project red or blue light and green light together on screen.

(4) Turn the deflection yoke of R or B and set so that the inclination of R or B with respect to the green light is as shown below on the top and bottom sides.

(5) After raster inclination adjustment, fixing screw of DY should be screwed with 12±2kg-cm torque.



**Notes:** (1) If internal cross-hatch does not appear after clearing RAM data, press service switch again, on POWER/DEFLECTION PWB.
(2) To restore old RAM data, turn TV off and on.

## 2.4 Beam alignment

Adjustment preparation

(1) Adjust at least 30 minutes after turning on power switch.

(2) Raster tilt should be completed. Raster position, horizontal and vertical size, and optical focus adjustment should be coarse adjusted.

(3) Set video conditions to factory reset.

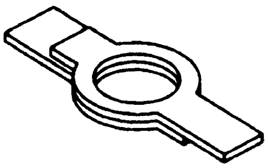
(4) Receive cross-hatch signal. (Use of internal cross-hatch signals allowed.)

(5) Short-circuit all metal parts (metal fittings, centering magnet) installed on the projection tubes to GND's of the projection tubes.
Since metal parts are charged with electricity, shocks may be caused if they are not short circuited.

Adjustment procedure

(1) Green (G) tube beam alignment adjustment. Short-circuit 2P subminiature connector plug pins of Red (R) and Blue (B) on the CPT boards and project only Green (G) light or you may cover the R and B lens.

(2) Put Green (G) tube beam alignment magnet to the cancel state as shown below.



(3) Turn the Green (G) static focus (Focus Pack) counterclockwise all the way and make sure of position of cross-hatch center on screen. (Halo state.)
(4) Turn the Green (G) static focus (Focus Pack) clockwise all the way. (Blooming state.)
(5) Turn two magnets forming alignment magnet in any desired direction and move cross-hatch center to position found in (3).
(6) If image position does not shift when Green (G) static focus (Focus Pack) is turned. Green (G) beam alignment has been completed.
(7) If image position shifts when Green (G) static focus (Focus Pack) is turned, repeat (2)-(6).
(8) Conduct beam alignment for red (R) focus: Focus Pack UFPK Blue (B) focus: Focus Pack UFPK.
(9) Upon completion of adjustment, fix beam alignment magnets with white paint.

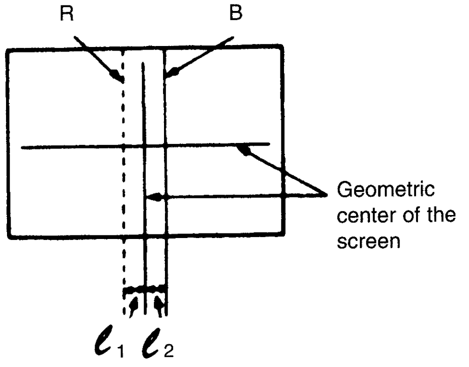
### 2.5 Raster position adjustment

Adjustment preparation
(1) The set can face east or west.
(2) Input the single cross test signal.
(3) Set video conditions to factory reset.
(4) The electric focus should have been coarse adjusted.
(5) The digital convergence RAM should be cleared (uncorrected state). With the TV set off, press and hold the service switch located on the Power/Deflection PWB and then press the power button.
(6) Start adjustment 20 minutes or more after TV is turned on.

Adjustment procedure
(1) Turn the centering magnets for red, green, and blue to satisfy the condition below. The red and blue horizontal lines should match with green.

| | $\ell_1$ (RED) | $\ell_2$ (BLUE) |
|---|---|---|
| 53" | 15 | 25 |
| 60" | 15 | 25 |

Tolerance: ± 2mm



**NOTES:** (1) If internal cross-hatch does not appear after clearing RAM data, press service switch again.
(2) To restore old RAM data, turn TV off and on.

### 2.6 Horizontal size adjustment

Adjustment preparation
(1) The set can face east or west.
(2) Set video conditions to factory reset.
(3) The electric focus should have been coarse adjusted.
(4) Start adjustment 20 minutes or more after TV is turned on.

Adjustment procedure

**PROGRESSIVE MODE**

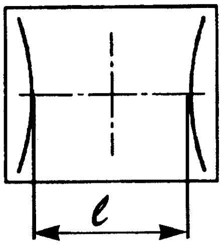
(1) Receive any NTSC signal.
(2) Press and hold the SERVICE ONLY SW on DEFLECTION PWB and press the MUTE key on Remote.
Green DCU cross-hatch and $I^2C$ Adjustment MENU should appear and digital convergence RAM should be cleared (uncorrected state).
(3) Choose H. SIZE item by using Remote ▲,▼ cursor buttons.
(4) Adjust H. SIZE as following by using Remote ◀,▶ cursor buttons.

**HD MODE**

(1) Input 1080I (fH=33. 75kHz) component signal to VIDEO 2.
(2) Press and hold the SERVICE ONLY SW on DEFLECTION PWB and press the MUTE key on Remote.
Green DCU cross-hatch and $I^2C$ Adjustment MENU should appear and digital convergence RAM should be cleared (uncorrected state).
(3) Choose H. SIZE item by using Remote ▲,▼ cursor buttons.
(4) Adjust H. SIZE as following by using Remote ◀,▶ cursor buttons.
(5) After adjustment, press SERVICE ONLY SW to exit from $I^2C$ adjustment mode.

| $\ell$ = | PROGRESSIVE MODE | HD MODE |
|---|---|---|
| 53" | 1050 | 1050 |
| 60" | 1190 | 1190 |

Tolerance: ± 5mm



**Note:** (1) If internal cross-hatch does not appear after clearing RAM data, press service switch again.
(2) To restore old RAM data, turn TV off and on.

## 2.7 Vertical size adjustment

Adjustment preparation
(1) The set can face east or west.
(2) Set video conditions to factory reset.
(3) Horizontal size adjustment should be finished.
(4) The electric focus should have been coarse adjusted.
(5) Start adjustment 20 minutes or more after TV is turned on.

Adjustment procedure

**PROGRESSIVE MODE**

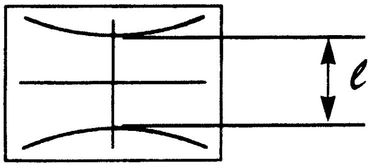
(1) Receive any NTSC signal.
(2) Press and hold the SERVICE ONLY SW on DEFLECTION PWB and press the MUTE key on Remote.
Green DCU cross-hatch and $I^2C$ Adjustment MENU should appear and digital convergence RAM should be cleared (uncorrected state).
(3) Choose V. SIZE item by using Remote ▲,▼ cursor buttons.
(4) Adjust V. SIZE as following by using Remote ◀,▶ cursor buttons.

**HD MODE**

(1) Input 1080I (fH=33. 75kHz) component signal to VIDEO 2.
(2) Press and hold the SERVICE ONLY SW on DEFLECTION PWB and press the MUTE key on Remote.
Green DCU cross-hatch and $I^2C$ Adjustment MENU should appear and digital convergence RAM should be cleared (uncorrected state).
(3) Choose V. SIZE item by using Remote ▲,▼ cursor buttons.
(4) Adjust V. SIZE as following by using Remote ◀,▶ cursor buttons.
(5) After adjustment, press SERVICE ONLY SW to exit from $I^2C$ adjustment mode.

| $\ell$ = | PROGRESSIVE MODE | HD MODE |
|---|---|---|
| 53" | 680 | 700 |
| 60" | 770 | 795 |

Tolerance: ± 5mm



**Note:** (1) If internal cross-hatch does not appear after clearing RAM data, press service switch again (on POWER/DEFLECTION PWB).
(2) To restore old RAM data, turn TV off and on.

## 2.8 Trapezoid Distortion Adjustment

Adjustment preparation
(1) Set video conditions to factory reset.

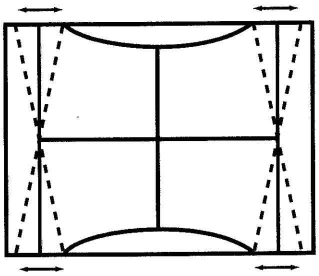
Adjustment procedure

**PROGRESSIVE MODE**

(1) Receive any NTSC signal.
(2) Press and hold the SERVICE ONLY SW on DEFLECTION PWB and press the MUTE key on Remote.
Green DCU cross-hatch and $I^2C$ Adjustment MENU should appear and digital convergence RAM should be cleared (uncorrected state).
(3) Choose TRAPEZOID item by using Remote ▲,▼ cursor buttons.
(4) Adjust TRAPEZOID as following by using Remote ◀,▶ cursor buttons.

**HD MODE**

(1) Input 1080I (fH=33. 75kHz) component signal to VIDEO 2.
(2) Press and hold the SERVICE ONLY SW on DEFLECTION PWB and press the MUTE key on Remote.
Green DCU cross-hatch and $I^2C$ Adjustment MENU should appear and digital convergence RAM should be cleared (uncorrected state).
(3) Choose TRAPEZOID item by using Remote ▲,▼ cursor buttons.
(4) Adjust TRAPEZOID as following by using Remote ◀,▶ cursor buttons.
(5) After adjustment, press SERVICE ONLY SW to exit from $I^2C$ adjustment mode.



Vertical Screen frame line & edge of vertical DCU crosshatch line should be parallel.

## 2.9 Side Pin Distortion Adjustment

Adjustment preparation
(1) Set video conditions to factory reset.

Adjustment procedure

**PROGRESSIVE MODE**

(1) Receive any NTSC signal.
(2) Press and hold the SERVICE ONLY SW on DEFLECTION PWB and press the MUTE key on Remote.
Green DCU cross-hatch and $I^2C$ Adjustment MENU should appear and digital convergence RAM should be cleared (uncorrected state).

(3) Choose SIDE PIN item by using Remote ▲,▼ cursor buttons.

(4) Adjust SIDE PIN as following by using Remote ◀,▶ cursor buttons.

**HD MODE**

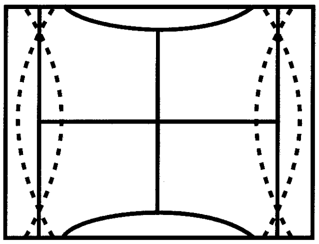
(1) Input 1080I (fH=33. 75kHz) component signal to VIDEO 2.

(2) Press and hold the SERVICE ONLY SW on DEFLECTION PWB and press the MUTE key on Remote.
Green DCU cross-hatch and I²C Adjustment MENU should appear and digital convergence RAM should be cleared (uncorrected state).

(3) Choose SIDE PIN item by using Remote ▲,▼ cursor buttons.

(4) Adjust SIDE PIN as following by using Remote ◀,▶ cursor buttons.

(5) After adjustment, press SERVICE ONLY SW to exit from I²C adjustment mode.



Edge of vertical DCU crosshatch line should be straight.

## 2.10 Beam form adjustment

Adjustment preparation

(1) The beam alignment should have been completed.

(2) The raster tilt, centering, horizontal/ vertical size, trapezoid and side pin adjustment should have been completed.

(3) Set video conditions to factory reset.

(4) Input the dot signal.

Adjustment procedure

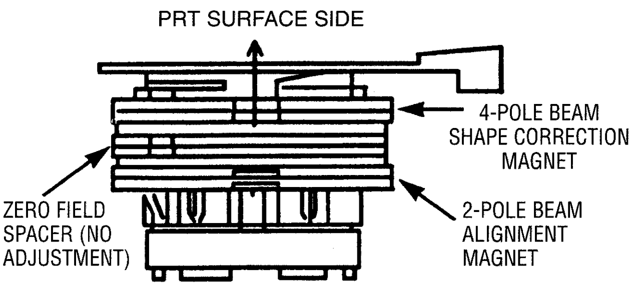
(1) Green PRT beam shape adjustment. Short-circuit 2P sub-mini connectors on Red and Blue CPT P.W.B.s to project only the Green beam.

(2) Turn the green static focus VR, on the Focus Pack, fully clockwise. (Blooming.)

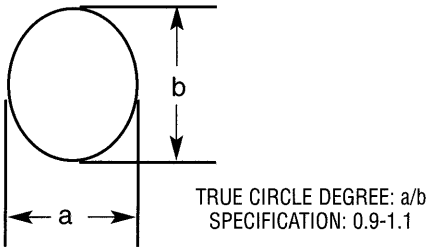
(3) Make the dot at the screen center a true circle using the 4-pole magnet as shown below.

(4) Also adjust the Red and Blue PRT beam shapes according to the steps (1) to (3).

(5) After the adjustment has been completed, return R, G and B static VRs to the just focus point.


PRT SURFACE SIDE
4-POLE BEAM SHAPE CORRECTION MAGNET
ZERO FIELD SPACER (NO ADJUSTMENT)
2-POLE BEAM ALIGNMENT MAGNET

TRUE CIRCLE SPECIFICATION



## 2.11 Lens focus adjustment

Adjustment preparation

(1) The set can face in any direction: west, east, north or south.

(2) Receive the cross-hatch pattern signal.
CONTRAST : HALF
BRIGHTNESS : MINIMUM

(3) The electrical focus adjustment should have been coarse adjusted.

(4) The raster position and raster tilt should have been adjusted.

Adjustment procedure

(1) Loosen the fixing screw on the lens cylinder so that the lens cylinder can be turned. (Be careful not to loosen too much. If it is loosened too much, rattling when tightening becomes greater and the focus may drift). After completing steps (5), (6) and (7) below, tighten the fixing screws for each lens with a torque of 12~17 Kgf•cm.

(2) Apply covers to 2 of R, G and B lenses, and project a single color on the screen and adjust in sequence.
(The adjustment order of R, G and B is only an example.)

(3) For each of the R, G and B lenses, observe the color abberation generated on the outer circumference of the cross-hatch bright line at the center section ±3 pitches vertically and horizontally from the center as well as in each corner of the screen.

(4) If the lens adjustment knob is turned clockwise, viewed from the front, the color aberration changes as follows.

| | Change of color aberration | |
|---|---|---|
| | Short focus | Long focus |
| R lens | Orange | Scarlet |
| G lens | Blue | Red |
| B lens | Purple | Green |

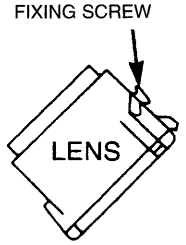
(5) In case of G lens, set to the point where the chromatic aberration switches from blue to red. If the chromatic aberration appearing all over the screen is not the same, observe the vertical bright line at the center of the screen and set to the position where red chromatic aberration slightly appears inside and blue outside.

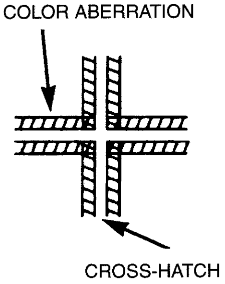
(6) In case of R lens, set to the position where the chromatic aberration changes from orange to scarlet. If the chromatic aberration appearing all over the screen is not the same, observe the vertical bright line at the center and set to the

position where the scarlet chromatic aberration slightly appears inside and orange outside.

(7) In case of B lens, set to the position where the chromatic aberration changes from purple to green. If the chromatic aberration appearing all over the screen is not the same, observe the vertical bright line at the center and set to the position where green chromatic aberration slightly appears inside and purple outside.

**Notes:** (1) Fixing screw (2) Color aberration


FIXING SCREW
LENS


COLOR ABERRATION
CROSS-HATCH

(3) Since the Green light is very important for picture quality and performance, pay special attention to its adjustment.

**Note:** Be careful not to touch the lens with your fingers when adjusting.

(4) For red, setting to the center between orange and scarlet is optimum.

(5) For blue, setting to the center between purple and green is optimum.

(6) All colors should have relatively uniform, good focus at all areas of screen.

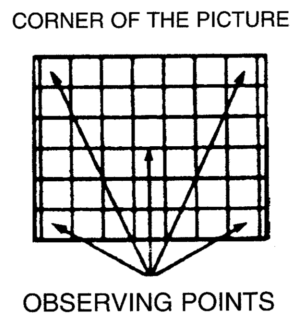
## 2.12 Static focus adjustment

Adjustment preparation

(1) The raster tilt, raster position, horizontal/vertical size, lens focus, beam form, and beam alignment should have been adjusted.
(2) Set video conditions to factory reset.
(3) Receive the cross-hatch pattern signal.
(4) Apply covers to the lenses of colors other than the color to be adjusted and project a single color.

Adjustment procedure

(1) Red (R), Green (G) and Blue (B) static focus adjustment. Vary the static focus VR (focus pack UFPK) and make the center of the cross-hatch pattern clearest.
(2) Observe the corners of the picture and check that the focus does not get conspicuously worse.


OBSERVING POINTS OF THE CORNER OF THE PICTURE
OBSERVING POINTS

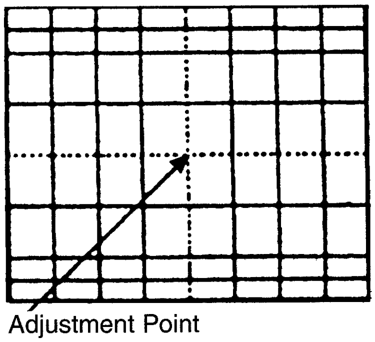
**Note:** Since the Green light is very important for picture quality and performance, pay special attention to its adjustment.

## 2.13 Digital convergence adjustment

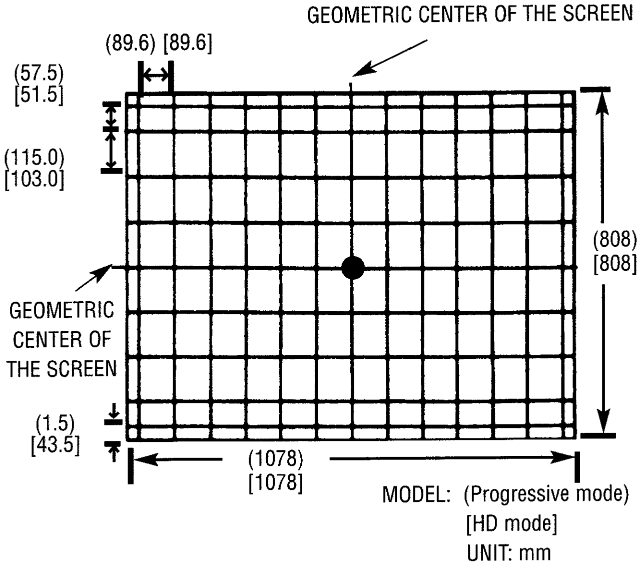
**Note:** If replacing a PRT, DY, etc. perform auto-digital convergence first. (Press front panel MAGIC FOCUS switch when in normal customer mode). This can eliminate the need for a complete digital convergence alignment.

Adjustment preparation

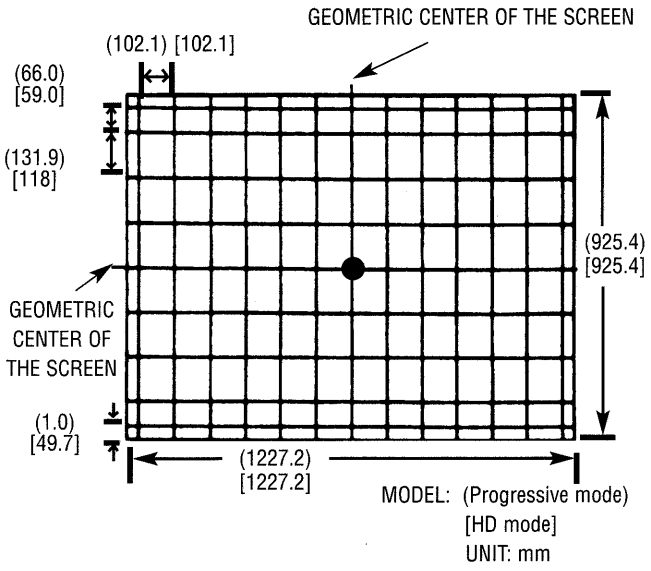
(1) Receive an RF or video signal.
(2) Set controls to factory preset.
(3) Install jig screen on the set.
(4) Note the center of the video pattern displayed. This is necessary to match dotted lines (adjustment point viewed) and actual point that is adjusted and displayed by the video signal.
(5) Press the service only switch (on POWER/DEFLECTION PWB). The pattern displayed is now the digital convergence mode.
(6) When performing a complete digital convergence adjustment CLEAR DATA in RAM. (With the TV set off, press and hold the service switch located on the Power/Deflection P.W.B. and then press the POWER button).


Adjustment Point

**53" JIG SCREEN SPECIFICATION**


GEOMETRIC CENTER OF THE SCREEN
(89.6) [89.6]
(57.5)
[51.5]
(115.0)
[103.0]
(808)
[808]
GEOMETRIC CENTER OF THE SCREEN
(1.5)
[43.5]
(1078)
[1078]
MODEL: (Progressive mode)
[HD mode]
UNIT: mm

### 60" JIG SCREEN SPECIFICATION



**Note:** If only minor adjustments to convergence are needed, the jig screen is not necessary. Use digital data stored in memory and one color as a reference (red, green, or blue). DO NOT CLEAR DATA and WRITE to ROM memory.

### 2.13.1 Raster position adjustment

Adjustment preparation

(1) Position adjustment - This will move an entire color. Use this adjustment to match colors at the center of the screen. (Active video center from external signal and physical screen center should now match from phase adj. 2.2.).

(2) Use the buttons below to switch color to adjust.
"RECALL" - Green
"0" - Red
"INPUT" - Blue

Adjustment procedure

(1) Press the FRZ button. Extra horizontal lines appear to confirm raster position mode.
(2) Use the cursor buttons to adjust position.
(3) Press FRZ again to exit raster position mode.

**Notes:** (1) Other functions cannot be accessed when in raster position adjustment mode. Press FRZ and confirm extra horizontal lines disappear to exit raster position mode.
(2) Press MENU to switch between all colors displayed or adjustment color and Green only.

### 2.13.2 Convergence point adjustment

Adjustment preparation

(1) Select color to adjust.
"RECALL" - Green
"0" - Red
"INPUT" - Blue
(2) Use 4, 6, 2, and 5 to move the cursor position (dotted lines).
(3) Use cursor buttons to move the convergence point.
(4) Three adjustment modes are available:
  1. (3x3) Press "RECALL" 5 times
  2. (7x5) Press "0" 5 times
  3. (13x9) Press "INPUT" 5 times

For touch-up, only the (13x9) mode is necessary. This will adjust every cross-hatch intersection point on the screen.

For complete adjustment, start with (3x3) mode. This will adjust center point and eight edge points only, but will greatly reduce adjustment time. Then use (7x5) mode, and finally (13x9) mode to finish convergence.

If "S" distortion appears between cross-hatch lines repeat (7x5) mode to change calculation process while adjusting to remove distortion, then return to (13x9) mode to finish touch-up convergence.

Adjustment procedure

**PROGRESSIVE MODE**

(1) Receive any NTSC signal.
(2) Start adjustment at the center of the screen.
(3) Continue adjustment at next closest position.
(4) Adjust center area first, ending with edge sections.
(5) Press INFO button to perform interpolation operation. This process will take about 15 seconds and no picture will be seen at this time.
(6) After interpolation, check convergence again and repeat (1)-(5) if necessary.
(7) When convergence is acceptable, press MOVE to write data to ROM memory. ROM WRITE? is displayed to alarm system that ROM will be overwritten with new data. Press the MOVE button again to write displayed data to ROM.
(8) DATA WRITE TO ROM will take approximately 20 seconds and no picture will be displayed.
(9) Green dots will be displayed when operation is complete.
(10) Press MUTE to return to convergence pattern, then confirm again convergence is acceptable.
(11) Press MOVE (ROM WRITE) mode, then press PIP CH to initialize sensor data positions.

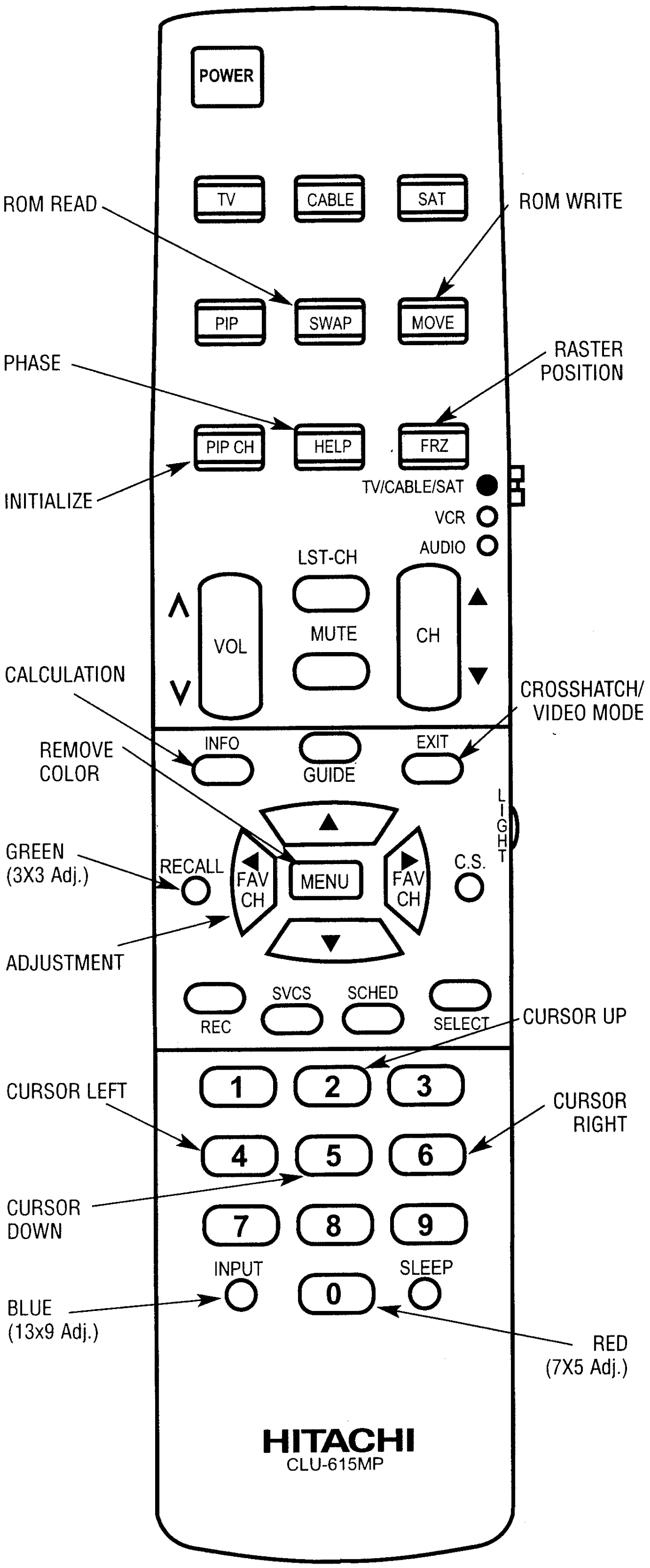
Adjustment procedure

**HD MODE**

(1) Receive any HD signal.
(2) Repeat steps 2~11 above.

**Notes:** (1) Display only green for easier adjustment and match to jig screen. Press "MENU", THEN PRESS "RECALL".
(2) Perform interpolation and data write to ROM after green adjustment. Once green has been confirmed to match jig screen, the jig screen can be removed. Do not readjust the green color after jig screen has been removed. This is now your reference color.
(3) Display green and red only and match red to green.
(4) Display all colors and match blue to green and red. Touch-up red color if necessary.
(5) Existing DATA in ROM can be read by pressing the SWAP button 2 times. This data can be used after replacing a component (CRT, DY, etc.) Where complete convergence adjustment is not necessary be careful not to overwrite this data.
DO NOT write cleared RAM data into ROM or a complete convergence adjustment will be necessary. Remember to try MAGIC FOCUS before starting convergence adjustment to minimize adjustment time.

### 2.13.3 Digital Convergence Remote Control


POWER
ROM READ
TV
CABLE
SAT
ROM WRITE
PIP
SWAP
MOVE
RASTER POSITION
PHASE
PIP CH
HELP
FRZ
INITIALIZE
TV/CABLE/SAT
VCR
AUDIO
LST-CH
VOL
MUTE
CH
CALCULATION
CROSSHATCH/ VIDEO MODE
REMOVE COLOR
INFO
GUIDE
EXIT
LIGHT
GREEN (3X3 Adj.)
RECALL
FAV CH
MENU
FAV CH
C.S.
ADJUSTMENT
REC
SVCS
SCHED
SELECT
CURSOR UP
CURSOR LEFT
1
2
3
CURSOR RIGHT
4
5
6
CURSOR DOWN
7
8
9
INPUT
SLEEP
BLUE (13x9 Adj.)
0
RED (7X5 Adj.)
HITACHI
CLU-615MP

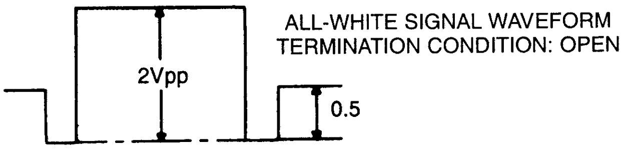
### 2.14 Blue defocus adjustment

Adjustment Preparation

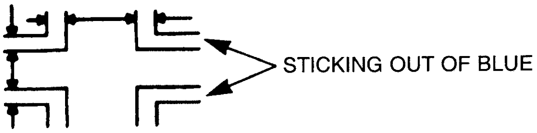
(1) Optical and electrical focus adjustment should have been completed.
(2) The convergence adjustment should have been completed.
(3) Set Video conditions to factory reset.
(4) Input the cross-hatch signal.

Adjustment procedure

(1) Input an all-white signal shown below to VIDEO input.
(2) Short-circuit 2P sub-mini connectors on the red and green CPT P.W.Bs. to display only the blue beam.
(3) Turn the B Focus VR (Focus Pack) fully clockwise.
(4) Measure the brightness at the center of the screen and turn the B FOCUS VR (Focus Pack) counterclockwise to adjust the brightness of blue.
(5) After the adjustment is completed, if blue exceeds the specification, turn and adjust focus so that the sticking out part of blue satisfies the specification.



ALL-WHITE SIGNAL WAVEFORM
TERMINATION CONDITION: OPEN


STICKING OUT OF BLUE

UNEVENNESS SPECIFICATION: ±1cd/m$^2$

Defocus sticking out specification

| Screen Size | Blue sticking out |
|---|---|
| 53" | 1.0mm |
| 60" | 1.0mm |

**Condition:** User controls are set to the initial set positions (for shipment)

Measuring point-Screen center.

**Cautions:** Correct the amplitude of the all-white signal periodically.

### 2.15 White balance adjustment

(1) Screen adjustment
(2) High brightness white balance.
(3) Low brightness balance.

| Screen adjustment VRs | Drive adjustment VRs |
|---|---|
| Red: on FOCUS PACK<br>Green: on FOCUS PACK<br>Blue: on FOCUS PACK | Red: R829 on CPT P.W.B.<br>Green: R879 on CPT P.W.B. |

Adjustment preparation

1. (1) Start adjustment 20 minutes or more after the power is turned on.
2. (2) The vertical incident illumination on the screen should be 20 lux or less. (Room should be dark).
3. (3) Set the video settings (CONTRAST: MAX, others: center) to standard condition.
4. (4) The blue defocus and cut off adjustments should be complete.
5. (5) For low brightness white balance adjustment, input a white raster signal level of 0.145 Vp-p (Video input level).
6. (6) For high brightness white balance adjustment, input a white raster signal level of 0.715Vp-p (Video input level).
7. (7) Set the drive adjustment VRs (red and green) to 12 - 2 o'clock position.
8. (8) Set video advanced setting white control to COOL position.

Adjustment procedure

1. (1) Select the input signal for high brightness (Video level = 0.715Vpp).
2. (2) Adjust the high brightness white balance using the drive adjustment VRs (red, green).
3. (3) Select the signal for low brightness (Video level = 0.145Vpp)
4. (4) Adjust the low brightness white balance using the screen adjustment VRs (red, green, blue). (Visually adjust).
5. (5) Check that high brightness white balance is still obtained. If it is not, return to step (2).

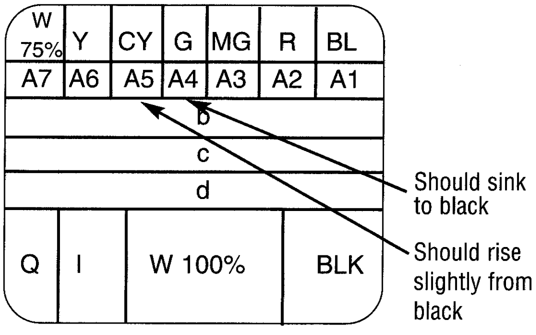
**NOTE:** When adjusting low level white balance, turn the screen VRs counterclockwise. The cut-off adjustment should already be complete and the screen VR's should not be increased past the level set at cut-off. Since the phosphorescent surface of the CRT is likely to be burned, be careful.

White balance = 9300° K ± 0MPCD
Color coordinate = x ...... 0.285
y ...... 0.295

## 2.16 Sub brightness adjustment

Adjustment preparation

1. (1) Start adjustment 20 minutes or more after the power is turned ON.
2. (2) Receive the color bar signal.
3. (3) Set video conditions to factory reset.
4. (4) The vertical incident illumination on the screen should be 20 lux or less. (Room should be dark).



Adjustment procedure

1. (1) Go to "Sub Brightness" adjustment in $I^2C$ ADJUST mode (press Input and Power button on Control panel at same time), using ▲ ▼ buttons and then ▶ button.
2. (2) Then adjust "Sub Brightness" using ◀ ▶ buttons to increase or decrease the value, according to figure. (Visually adjust).
3. (3) After adjustment, press MENU button to exit $I^2C$ ADJUST mode. (Data is stored in memory).

**Note:** When selecting SUB-BRIGHTNESS mode the microcontroller sets the CONTRAST and COLOR to MIN. automatically, but make sure that the other conditions are center.
Directly observe the screen by eye without using a mirror.

## 2.17 Horizontal and Vertical position adjustment

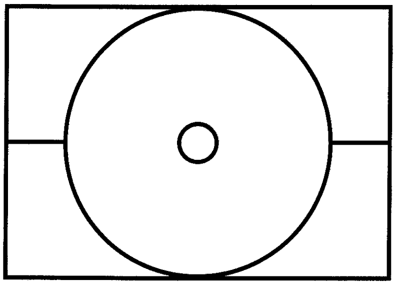
Adjustment preparation

1. (1) The set should face East or West.
2. (2) Set video conditions to factory reset.
3. (3) DIGITAL CONVERGENCE adjustment should be finished. (Progressive mode and HD mode).

Adjustment procedure

**PROGRESSIVE MODE**

1. (1) Receive cross hatch pattern.
2. (2) Go to $I^2C$ Adjustment mode by pressing INPUT and POWER button on control panel at the same time.
3. (3) Choose H. POSI item by using Remote ▲,▼ cursor buttons.
4. (4) Adjust HOR. POSITION as following by using Remote ◀,▶ cursor buttons.
5. (5) Choose V. POSI item by using Remote ▲,▼ cursor buttons.
6. (6) Adjust V. Position as following by using Remote ◀,▶ cursor buttons.

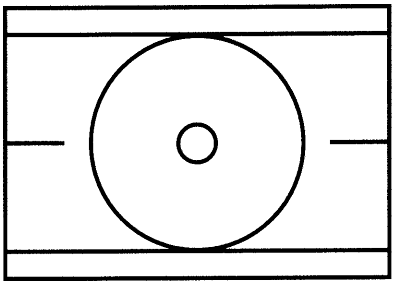


Spec: Balance Left/Right side display position for H. position.

Balance Top/Bottom side display position for V. position.

## HD MODE

(1) Input 1080I (fH=33. 75kHz) component circle pattern signal to VIDEO 2.
(2) Go to I²C Adjustment mode by pressing INPUT and POWER button on control panel at the same time.
(3) Choose H. POSI item by using Remote ▲,▼ cursor buttons.
(4) Adjust HOR. POSITION as following by using Remote ◀,▶ cursor buttons.
(5) Check V. POSI item by using Remote ▲,▼ cursor buttons.
(6) Adjust V. Position as following by using Remote ◀,▶ cursor buttons.



Spec: Balance Left/Right side display position for H. position.

Balance Top/Bottom side display position for V. position.

# BASIC CIRCUIT DIAGRAM

## SIGNAL (1/3)
## SIGNAL (2/3)

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

| Circuit No. | Pin No. | Voltage VDC | Pin No. | Voltage VDC |
|---|---|---|---|---|
| I001 | 1 | 0.0 | 33 | 2.5 |
| | 2 | 5.2 | 34 | 4.6 |
| | 3 | 5.2 | 35 | 5.0 |
| | 4 | 2.1 | 36 | 1.1 |
| | 5 | 5.2 | 37 | 1.0 |
| | 6 | 0.2 | 38 | 0.0 |
| | 7 | 2.5 | 39 | 4.4 |
| | 8 | 3.2 | 40 | 0.0 |
| | 9 | 5.2 | 41 | 0.0 |
| | 10 | 0.3 | 42 | 0.0 |
| | 11 | 0.0 | 43 | 0.0 |
| | 12 | 5.1 | 44 | 0.0 |
| | 13 | 5.1 | 45 | 3.4 |
| | 14 | 5.0 | 46 | 3.5 |
| | 15 | 5.2 | 47 | 3.5 |
| | 16 | 0.0 | 48 | 0.0 |
| | 17 | 0.0 | 49 | 5.2 |
| | 18 | 5.2 | 50 | 1.4 |
| | 19 | 5.1 | 51 | 1.4 |
| | 20 | 0.0 | 52 | 5.2 |
| | 21 | 2.5 | 53 | 4.1 |
| | 22 | 5.2 | 54 | 5.2 |
| | 23 | 0.1 | 55 | 5.2 |
| | 24 | 2.5 | 56 | 5.2 |
| | 25 | 1.3 | 57 | 5.1 |
| | 26 | 2.0 | 58 | 5.1 |
| | 27 | 2.1 | 59 | 4.0 |
| | 28 | 4.9 | 60 | 4.2 |
| | 29 | 5.1 | 61 | 5.2 |
| | 30 | 5.0 | 62 | 2.7 |
| | 31 | 0.3 | 63 | 2.8 |
| | 32 | 5.2 | 64 | 0.0 |

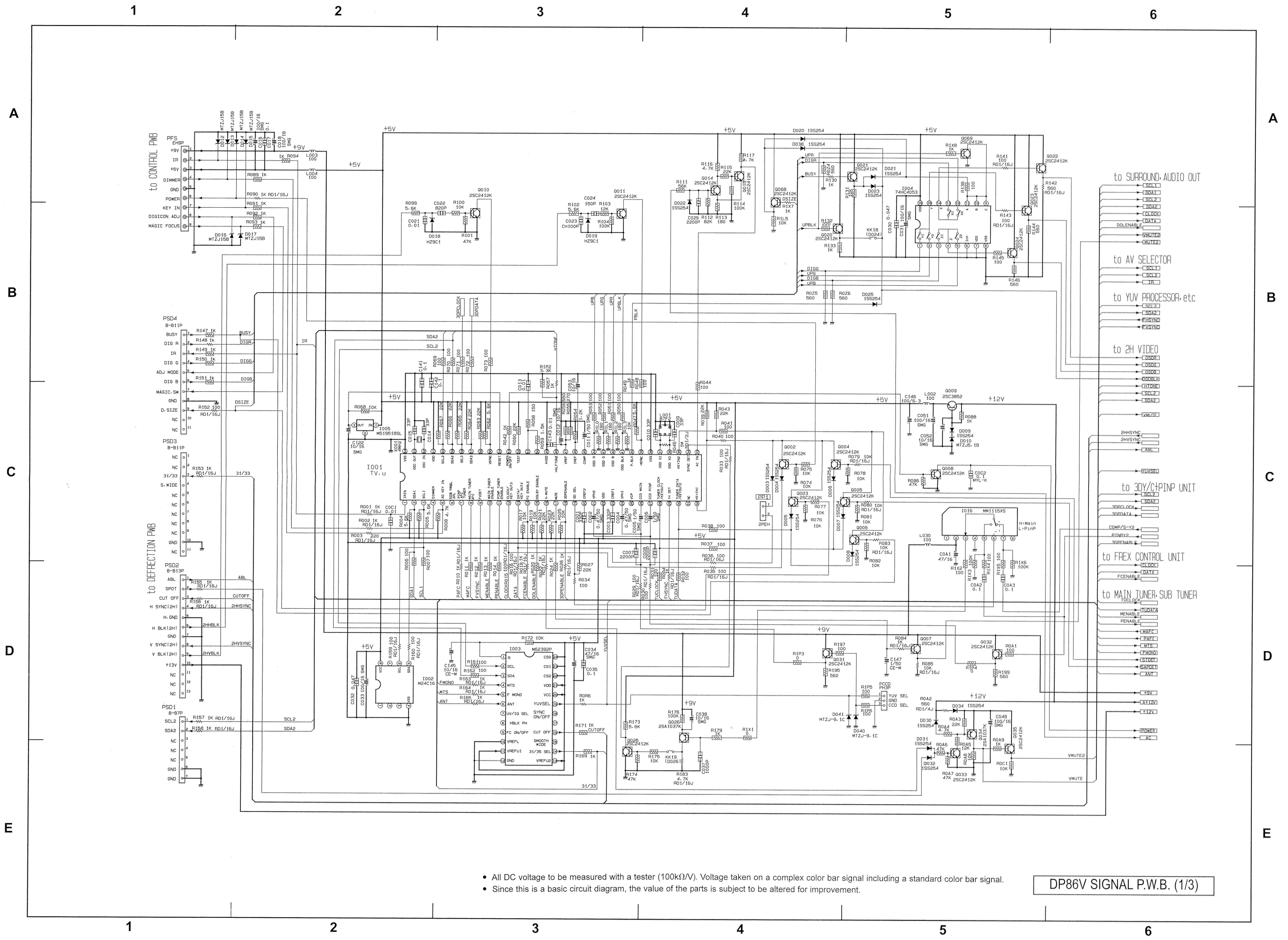
| Circuit No. | Pin No. | Voltage VDC |
|---|---|---|
| I002 | 1 | 0.0 |
| | 2 | 0.0 |
| | 3 | 0.0 |
| | 4 | 0.0 |
| | 5 | 5.2 |
| | 6 | 5.2 |
| | 7 | 0.0 |
| | 8 | 5.2 |

| Circuit No. | Pin No. | Voltage VDC | Pin No. | Voltage VDC |
|---|---|---|---|---|
| I003 | 1 | 5.2 | 13 | 5.2 |
| | 2 | 4.1 | 14 | 5.2 |
| | 3 | 4.2 | 15 | 0.0 |
| | 4 | 4.6 | 16 | 0.0 |
| | 5 | 5.0 | 17 | 0.0 |
| | 6 | 5.2 | 18 | 0.0 |
| | 7 | 0.0 | 19 | 0.0 |
| | 8 | 5.2 | 20 | 5.2 |
| | 9 | 5.2 | 21 | 5.2 |
| | 10 | 0.0 | 22 | 5.2 |
| | 11 | 5.2 | 23 | 5.2 |
| | 12 | 0.0 | 24 | 5.2 |

| Circuit No. | Pin No. | Voltage VDC |
|---|---|---|
| I004 | 1 | 0.0 |
| | 2 | 0.0 |
| | 3 | 0.0 |
| | 4 | 0.0 |
| | 5 | 0.0 |
| | 6 | 0.0 |
| | 7 | 0.0 |
| | 8 | 0.0 |
| | 9 | 0.0 |
| | 10 | 0.0 |
| | 11 | 0.0 |
| | 12 | 0.0 |
| | 13 | 0.0 |
| | 14 | 0.0 |
| | 15 | 0.0 |
| | 16 | 5.2 |

| Circuit No. | Pin No. | Voltage VDC |
|---|---|---|
| I005 | 1 | 5.2 |
| | 2 | 0.0 |
| | 3 | 5.2 |
| I008 | 1 | 9.1 |
| | 2 | 0.0 |
| | 3 | 5.0 |
| I012 | 1 | 5.3 |
| | 2 | 0.0 |
| | 3 | 3.3 |
| I016 | 1 | 0.0 |
| | 2 | 9.1 |
| | 3 | 2.9 |
| | 4 | 0.0 |
| | 5 | 3.6 |
| | 6 | 5.1 |
| | 7 | 3.6 |
| | 8 | 0.0 |

| | | |
|---|---|---|
| Q001 | B | 5.2 |
| | C | 1.1 |
| | E | 5.1 |
| Q002 | B | 0.0 |
| | C | 5.2 |
| | E | 0.0 |
| Q003 | B | 0.0 |
| | C | 5.2 |
| | E | 0.0 |
| Q004 | B | 0.0 |
| | C | 5.2 |
| | E | 0.0 |
| Q005 | B | 0.0 |
| | C | 5.2 |
| | E | 0.0 |
| Q006 | B | 0.0 |
| | C | 5.2 |
| | E | 0.0 |
| Q007 | B | 0.1 |
| | C | 9.0 |
| | E | 0.1 |
| Q008 | B | 0.8 |
| | C | 0.1 |
| | E | 0.0 |
| Q009 | B | 5.8 |
| | C | 12.0 |
| | E | 5.3 |
| Q010 | B | 0.0 |
| | C | 5.2 |
| | E | 0.0 |
| Q011 | B | -1.9 |
| | C | 4.4 |
| | E | 0.0 |
| Q012 | B | 0.0 |
| | C | 5.2 |
| | E | 0.0 |
| Q013 | B | 3.6 |
| | C | 5.2 |
| | E | 3.0 |
| Q014 | B | 0.4 |
| | C | 2.6 |
| | E | 0.2 |
| Q015 | B | 0.6 |
| | C | 2.5 |
| | E | 0.2 |
| Q018 | B | 0.0 |
| | C | 5.2 |
| | E | 0.0 |


1
2
3
4
5
6
A
B
C
D
E
to CONTROL PWB
PFS
to DEFECTION PWB
PSD4
PSD3
PSD2
PSD1
I001
TV.u
I002
M24C16
I003
M52392P
I004
74HC4053
I005
M5195BSL
I016
MM1116XS
+5V
+9V
+12V
to SURROUND·AUDIO OUT
to AV SELECTOR
to YUV PROCESSOR·etc
to 2H VIDEO
to 3DY/C·PINP UNIT
to FREX CONTROL UNIT
to MAIN TUNER·SUB TUNER

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

DP86V SIGNAL P.W.B. (1/3)

| | | |
|---|---|---|
| Q019 | B | 3.0 |
| | C | 0.0 |
| | E | 3.6 |
| Q020 | B | 0.0 |
| | C | 5.2 |
| | E | 0.0 |
| Q021 | B | 0.0 |
| | C | 5.2 |
| | E | 0.0 |
| Q022 | B | 0.0 |
| | C | 5.2 |
| | E | 0.1 |
| Q023 | B | 0.0 |
| | C | 5.2 |
| | E | 0.1 |
| Q024 | B | 0.0 |
| | C | 5.2 |
| | E | 0.1 |
| Q025 | B | 0.1 |
| | C | 4.7 |
| | E | 0.0 |
| Q026 | B | 2.9 |
| | C | 0.2 |
| | E | 2.5 |
| Q031 | B | 2.2 |
| | C | 9.1 |
| | E | 1.6 |
| Q032 | B | 3.7 |
| | C | 9.1 |
| | E | 3.1 |
| Q033 | B | 0.0 |
| | C | 11.7 |
| | E | 0.0 |
| Q034 | B | 11.8 |
| | C | 0.0 |
| | E | 11.8 |
| Q035 | B | 0.0 |
| | C | 11.8 |
| | E | 0.0 |
| Q036 | B | 7.1 |
| | C | 9.1 |
| | E | 6.4 |

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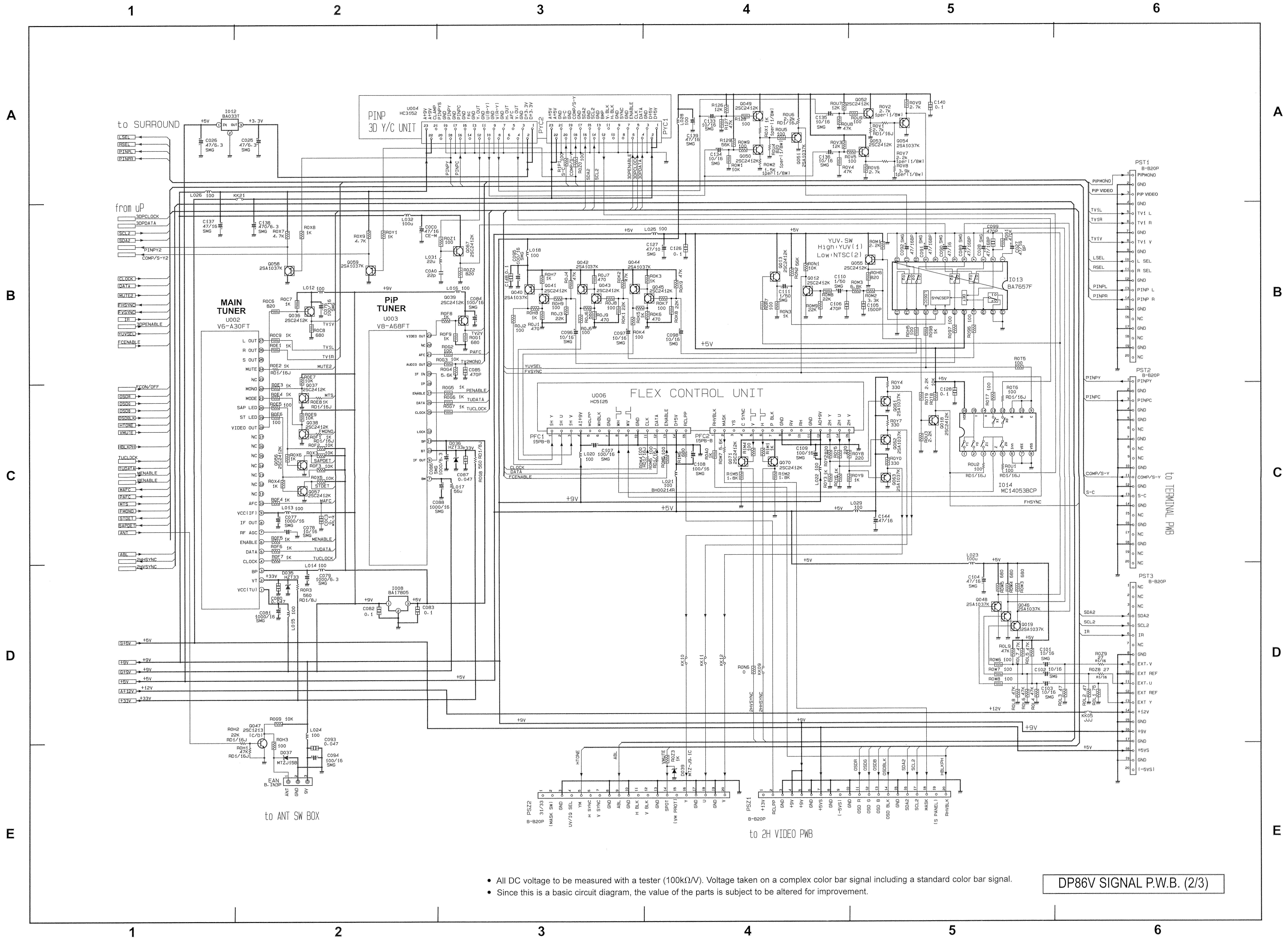
# BASIC CIRCUIT DIAGRAM

## SIGNAL (1/3)
## SIGNAL (2/3)

| | | |
|---|---|---|
| Q037 | B | 0.7 |
| | C | 0.0 |
| | E | 0.0 |
| Q038 | B | 0.7 |
| | C | 0.0 |
| | E | 0.0 |
| Q039 | B | 1.5 |
| | C | 9.0 |
| | E | 0.9 |
| Q040 | B | 8.4 |
| | C | 6.1 |
| | E | 9.0 |
| Q041 | B | 2.8 |
| | C | 8.2 |
| | E | 2.2 |
| Q042 | B | 8.3 |
| | C | 3.8 |
| | E | 9.0 |
| Q043 | B | 2.7 |
| | C | 8.4 |
| | E | 2.1 |
| Q044 | B | 8.3 |
| | C | 6.1 |
| | E | 8.9 |
| Q045 | B | 2.8 |
| | C | 8.2 |
| | E | 2.2 |
| Q046 | B | 3.0 |
| | C | 0.0 |
| | E | 3.6 |
| Q047 | B | 0.6 |
| | C | 0.0 |
| | E | 0.0 |
| Q048 | B | 3.0 |
| | C | 0.0 |
| | E | 3.6 |
| Q049 | B | 7.0 |
| | C | 9.0 |
| | E | 6.4 |
| Q050 | B | 1.3 |
| | C | 2.7 |
| | E | 0.7 |
| Q051 | B | 2.7 |
| | C | 0.0 |
| | E | 3.3 |
| Q052 | B | 7.0 |
| | C | 8.9 |
| | E | 6.3 |
| Q053 | B | 7.1 |
| | C | 9.0 |
| | E | 6.4 |
| Q054 | B | 4.8 |
| | C | 0.0 |
| | E | 5.9 |
| Q055 | B | 0.2 |
| | C | 5.2 |
| | E | 0.0 |
| Q056 | B | 0.7 |
| | C | 0.0 |
| | E | 0.0 |
| Q057 | B | 0.7 |
| | C | 0.0 |
| | E | 0.0 |
| Q058 | B | 3.1 |
| | C | 0.0 |
| | E | 3.7 |
| Q059 | B | 3.1 |
| | C | 0.0 |
| | E | 3.7 |
| Q061 | B | 1.8 |
| | C | 0.0 |
| | E | 2.5 |
| Q062 | B | 3.0 |
| | C | 0.0 |
| | E | 3.7 |
| Q063 | B | 3.1 |
| | C | 0.0 |
| | E | 3.7 |
| Q067 | B | 5.9 |
| | C | 8.9 |
| | E | 5.2 |
| Q068 | B | 0.0 |
| | C | 5.2 |
| | E | 0.0 |
| Q069 | B | 0.0 |
| | C | 0.1 |
| | E | 0.0 |
| Q070 | B | 4.8 |
| | C | 8.7 |
| | E | 4.2 |
| Q071 | B | 5.1 |
| | C | 8.8 |
| | E | 4.4 |



1
2
3
4
5
6
A
B
C
D
E
to SURROUND
from uP
I012
BA033T
PINP
3D Y/C UNIT
U004
HC3152
PYC2
PYC1
MAIN
TUNER
U002
V6-A30FT
PiP
TUNER
U003
V8-A68FT
YUV.SW
High:YUV(1)
Low:NTSC(2)
I013
BA7657F
FLEX CONTROL UNIT
U006
HC5125
PFC1
PFC2
I014
MC14053BCP
I008
BA17805
PST1
PST2
PST3
B-B20P
to TERMINAL PWB
to ANT SW BOX
PSZ1
PSZ2
to 2H VIDEO PWB

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

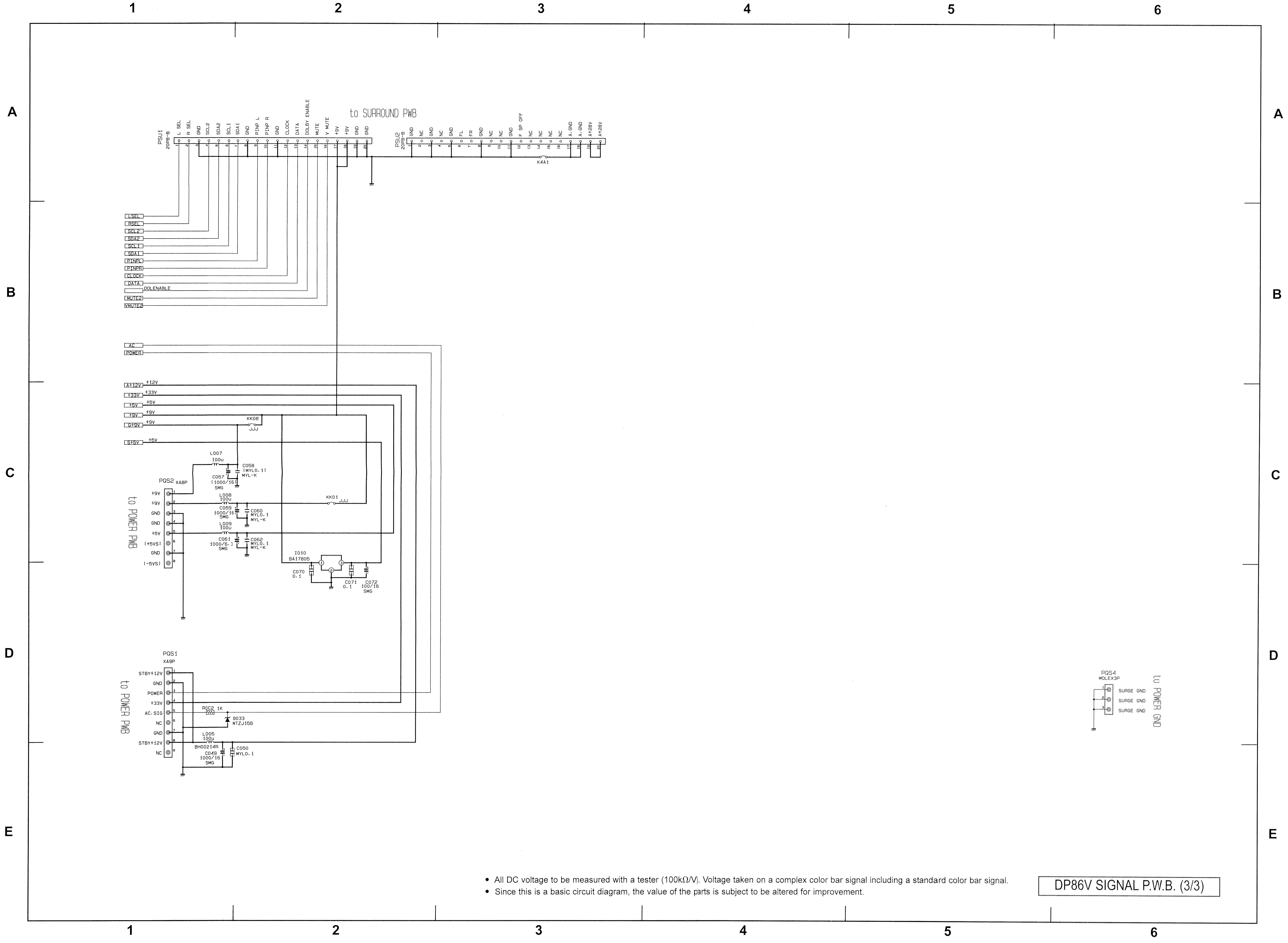
DP86V SIGNAL P.W.B. (2/3)

| Circuit No. | Pin No. | Voltage VDC | Pin No. | Voltage VDC |
|---|---|---|---|---|
| I013 | 1 | 0.0 | 13 | 0.0 |
| | 2 | 0.0 | 14 | 0.0 |
| | 3 | 0.0 | 15 | 2.3 |
| | 4 | 0.0 | 16 | 0.0 |
| | 5 | 0.0 | 17 | 0.2 |
| | 6 | 0.0 | 18 | 2.7 |
| | 7 | 3.8 | 19 | 2.3 |
| | 8 | 0.0 | 20 | 5.2 |
| | 9 | 3.8 | 21 | 2.3 |
| | 10 | 0.0 | 22 | 0.0 |
| | 11 | 3.8 | 23 | 0.0 |
| | 12 | 0.0 | 24 | 0.0 |
| I014 | 1 | 0.1 | | |
| | 2 | 0.0 | | |
| | 3 | 5.2 | | |
| | 4 | 4.6 | | |
| | 5 | 4.6 | | |
| | 6 | 0.0 | | |
| | 7 | 0.0 | | |
| | 8 | 0.0 | | |
| | 9 | 0.0 | | |
| | 10 | 0.0 | | |
| | 11 | 0.0 | | |
| | 12 | 0.1 | | |
| | 13 | 5.2 | | |
| | 14 | 0.1 | | |
| | 15 | 0.1 | | |
| | 16 | 5.2 | | |

# BASIC CIRCUIT DIAGRAM
## SIGNAL (3/3)
## 2H VIDEO

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

| Circuit No. | Pin No. | Voltage VDC |
|---|---|---|
| I010 | 1 | 5.0 |
| | 2 | 0.0 |
| | 3 | 9.0 |


1
2
3
4
5
6
A
B
C
D
E
to SURROUND PWB
PSU1
20PB-B
L SEL
R SEL
GND
SCL2
SDA2
SCL1
SDA1
GND
PINP L
PINP R
GND
CLOCK
DATA
DOLBY ENABLE
MUTE
V MUTE
+9V
+9V
GND
GND
PSU2
20PB-B
GND
NC
GND
NC
GND
FL
FR
GND
NC
NC
GND
F SP OFF
NC
NC
NC
NC
A.GND
A.GND
A+28V
A+28V
K4A1
LSEL
RSEL
SCL2
SDA2
SCL1
SDA1
PINPL
PINPR
CLOCK
DATA
DOLENABLE
MUTE2
VMUTE2
AC
POWER
A+12V
+12V
+33V
+33V
+5V
+5V
+9V
+9V
G+9V
+9V
KK08
JJJ
S+5V
+5V
L007
100u
C058
(MYL0.1)
MYL-K
C057
(1000/16)
SMG
PQS2 XA8P
to POWER PWB
+9V
+9V
GND
GND
+5V
(+5VS)
GND
(-5VS)
L008
100u
C059
1000/16
SMG
C060
MYL0.1
MYL-K
KK01
JJJ
L009
100u
C061
1000/6.3
SMG
C062
MYL0.1
MYL-K
I010
BA17805
C070
0.1
C071
0.1
C072
100/16
SMG
PQS1
XA9P
to POWER PWB
STBY+12V
GND
POWER
+33V
AC.SIG
NC
GND
STBY+12V
NC
R0C2 1K
D033
MTZJ15B
L005
100u
BH00214R
C049
1000/16
SMG
C050
MYL0.1
PQS4
MOLEX3P
SURGE GND
SURGE GND
SURGE GND
to POWER GND

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

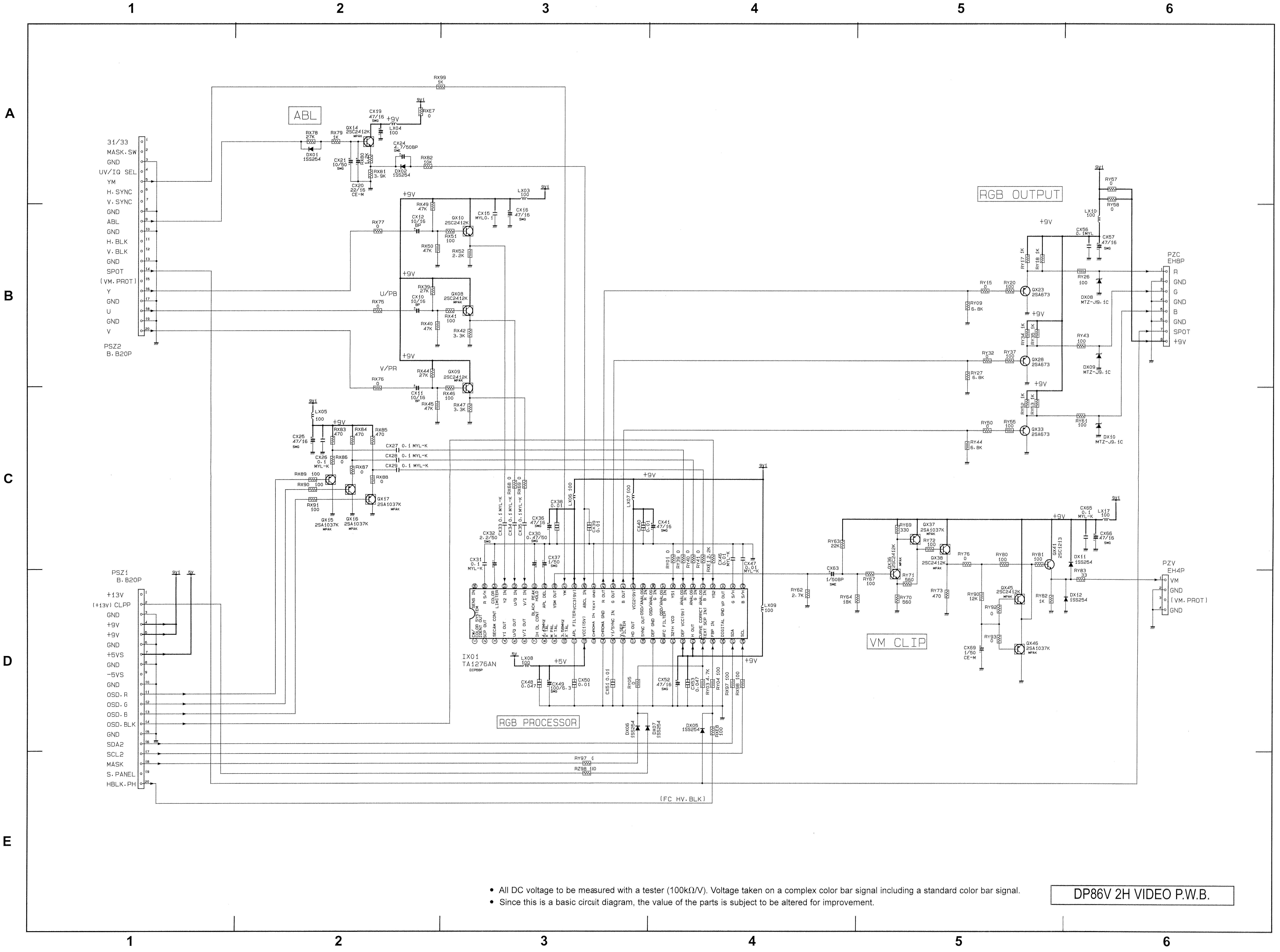
DP86V SIGNAL P.W.B. (3/3)

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

# BASIC CIRCUIT DIAGRAM

## SIGNAL (3/3)

## 2H VIDEO


1
2
3
4
5
6
A
B
C
D
E
ABL
RGB OUTPUT
RGB PROCESSOR
VM CLIP
31/33
MASK.SW
GND
UV/IQ SEL
YM
H.SYNC
V.SYNC
GND
ABL
GND
H.BLK
V.BLK
GND
SPOT
[VM.PROT]
Y
GND
U
GND
V
PSZ2
B.B20P
PSZ1
B.B20P
+13V
(+13V) CLPP
GND
+9V
+9V
GND
+5VS
GND
-5VS
GND
OSD.R
OSD.G
OSD.B
OSD.BLK
GND
SDA2
SCL2
MASK
S.PANEL
HBLK.PH
PZC
EH8P
R
GND
G
GND
B
GND
SPOT
+9V
PZV
EH4P
VM
GND
[VM.PROT]
GND
IX01
TA1276AN
U/PB
V/PR
+9V
+5V
QX08 2SC2412K
QX09 2SC2412K
QX10 2SC2412K
QX14 2SC2412K
QX15 2SA1037K
QX16 2SA1037K
QX17 2SA1037K
QX23 2SA673
QX28 2SA673
QX33 2SA673
QX36 2SC2412K
QX37 2SA1037K
QX38 2SC2412K
QX41 2SC1213
QX45 2SC2412K
QX46 2SA1037K
DX08 MTZ-J9.1C
DX09 MTZ-J9.1C
DX10 MTZ-J9.1C
(FC HV.BLK)
DP86V 2H VIDEO P.W.B.

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

DP86V 2H VIDEO P.W.B.

| Circuit No. | Pin No. | Voltage VDC | Pin No. | Voltage VDC |
|---|---|---|---|---|
| IX01 | 1 | 1.6 | 29 | 4.9 |
| | 2 | 7.6 | 30 | 4.9 |
| | 3 | 5.9 | 31 | 4.9 |
| | 4 | 2.9 | 32 | 0.0 |
| | 5 | 2.4 | 33 | 3.5 |
| | 6 | 2.3 | 34 | 3.5 |
| | 7 | 1.8 | 35 | 3.5 |
| | 8 | 4.2 | 36 | 0.0 |
| | 9 | 4.3 | 37 | 3.5 |
| | 10 | 4.2 | 38 | 3.5 |
| | 11 | 1.6 | 39 | 3.5 |
| | 12 | 4.9 | 40 | 8.9 |
| | 13 | 2.4 | 41 | 2.5 |
| | 14 | 0.0 | 42 | 2.5 |
| | 15 | 2.6 | 43 | 2.5 |
| | 16 | 0.0 | 44 | 0.0 |
| | 17 | 0.0 | 45 | 6.1 |
| | 18 | 0.0 | 46 | 8.9 |
| | 19 | 0.0 | 47 | 0.0 |
| | 20 | 7.4 | 48 | 3.3 |
| | 21 | 0.0 | 49 | 5.2 |
| | 22 | 8.9 | 50 | 4.9 |
| | 23 | 8.9 | 51 | 5.0 |
| | 24 | 1.2 | 52 | 5.0 |
| | 25 | 1.4 | 53 | 6.3 |
| | 26 | 0.0 | 54 | 6.9 |
| | 27 | 3.7 | 55 | 5.1 |
| | 28 | 4.2 | 56 | 2.8 |

| Circuit No. | Pin No. | Voltage VDC | Pin No. | Voltage VDC |
|---|---|---|---|---|
| PSZ1 | 1 | 0.0 | 11 | 0.9 |
| | 2 | 0.2 | 12 | 0.6 |
| | 3 | 0.0 | 13 | 0.6 |
| | 4 | 9.0 | 14 | 0.0 |
| | 5 | 9.0 | 15 | 0.0 |
| | 6 | 0.0 | 16 | 4.0 |
| | 7 | 5.0 | 17 | 4.1 |
| | 8 | 0.0 | 18 | 1.1 |
| | 9 | 0.0 | 19 | 0.0 |
| | 10 | 0.0 | 20 | 1.4 |
| PSZ2 | 1 | 4.5 | 11 | 1.7 |
| | 2 | 0.0 | 12 | -0.6 |
| | 3 | 0.0 | 13 | 0.0 |
| | 4 | 0.0 | 14 | 0.0 |
| | 5 | 0.0 | 15 | 0.0 |
| | 6 | 4.3 | 16 | 2.6 |
| | 7 | 4.3 | 17 | 0.0 |
| | 8 | 0.0 | 18 | 3.7 |
| | 9 | 12.5 | 19 | 0.0 |
| | 10 | 0.0 | 20 | 3.7 |

| | | |
|---|---|---|
| QX08 | B | 5.0 |
| | C | 8.9 |
| | E | 5.4 |
| QX09 | B | 5.0 |
| | C | 8.9 |
| | E | 5.4 |
| QX10 | B | 4.2 |
| | C | 8.9 |
| | E | 3.7 |
| QX14 | B | 9.6 |
| | C | 9.0 |
| | E | 8.9 |
| QX15 | B | 0.7 |
| | C | 0.0 |
| | E | 0.0 |
| QX16 | B | 0.0 |
| | C | 0.0 |
| | E | 0.7 |
| QX17 | B | 0.1 |
| | C | 0.0 |
| | E | 0.0 |
| QX23 | B | 2.3 |
| | C | 0.0 |
| | E | 3.0 |
| QX28 | B | 2.3 |
| | C | 0.0 |
| | E | 3.0 |
| QX33 | B | 2.3 |
| | C | 0.0 |
| | E | 3.0 |
| QX36 | B | -0.8 |
| | C | 8.3 |
| | E | -0.8 |
| QX37 | B | 8.3 |
| | C | 5.4 |
| | E | 8.9 |
| QX38 | B | 5.4 |
| | C | 8.9 |
| | E | 4.7 |
| QX41 | B | 4.9 |
| | C | 8.9 |
| | E | 4.3 |
| QX45 | B | 4.9 |
| | C | 8.9 |
| | E | 4.8 |
| QX46 | B | -0.8 |
| | C | -0.8 |
| | E | 4.7 |

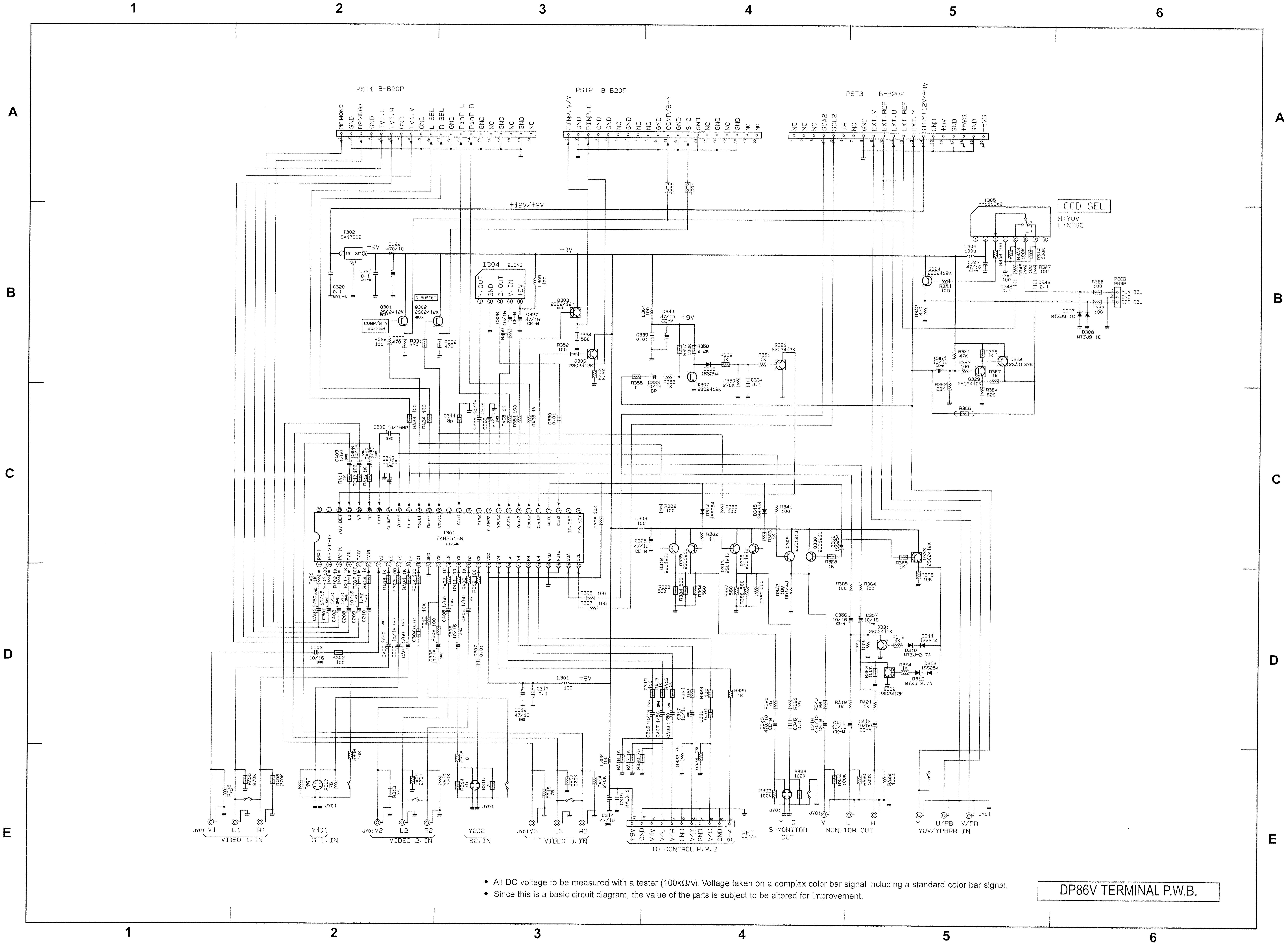
# BASIC CIRCUIT DIAGRAM
## TERMINAL
## DEFLECTION

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

| Circuit No. | Pin No. | Voltage VDC | Pin No. | Voltage VDC |
|---|---|---|---|---|
| I301 | 1 | 5.2 | 28 | 0.0 |
| | 2 | 5.2 | 29 | 0.0 |
| | 3 | 5.2 | 30 | 5.2 |
| | 4 | 5.2 | 31 | 0.2 |
| | 5 | 5.2 | 32 | 3.7 |
| | 6 | 5.2 | 33 | 4.0 |
| | 7 | 5.1 | 34 | 3.7 |
| | 8 | 5.0 | 35 | 4.0 |
| | 9 | 5.1 | 36 | 3.5 |
| | 10 | 4.9 | 37 | 3.5 |
| | 11 | 5.1 | 38 | 5.2 |
| | 12 | 0.0 | 39 | 4.0 |
| | 13 | 5.2 | 40 | 4.8 |
| | 14 | 4.9 | 41 | 4.0 |
| | 15 | 5.2 | 42 | 3.7 |
| | 16 | 5.0 | 43 | 4.0 |
| | 17 | 5.2 | 44 | 4.2 |
| | 18 | 9.0 | 45 | 4.0 |
| | 19 | 5.2 | 46 | 3.5 |
| | 20 | 5.2 | 47 | 3.5 |
| | 21 | 5.2 | 48 | 5.2 |
| | 22 | 5.2 | 49 | 5.0 |
| | 23 | 5.2 | 50 | 5.2 |
| | 24 | 0.0 | 51 | 4.8 |
| | 25 | 0.0 | 52 | 4.5 |
| | 26 | 3.6 | 53 | 4.7 |
| | 27 | 4.0 | 54 | 4.3 |
| I302 | 1 | 12.0 | | |
| | 2 | 0.0 | | |
| | 3 | 9.1 | | |
| I304 | 1 | 6.5 | | |
| | 2 | 0.0 | | |
| | 3 | 4.0 | | |
| | 4 | 5.0 | | |
| | 5 | 9.0 | | |
| I305 | 1 | -0.5 | | |
| | 2 | 9.1 | | |
| | 3 | 3.0 | | |
| | 4 | 0.0 | | |
| | 5 | 3.7 | | |
| | 6 | 0.0 | | |
| | 7 | 2.5 | | |
| | 8 | -0.4 | | |

| | | |
|---|---|---|
| Q301 | B | 3.2 |
| | C | 9.1 |
| | E | 3.8 |
| Q302 | B | 3.1 |
| | C | 9.1 |
| | E | 3.7 |
| Q303 | B | 3.1 |
| | C | 9.1 |
| | E | 3.8 |
| Q305 | B | 3.6 |
| | C | 9.0 |
| | E | 2.8 |
| Q306 | B | 3.1 |
| | C | 9.1 |
| | E | 3.7 |
| Q307 | B | 0.7 |
| | C | 0.0 |
| | E | 0.0 |
| Q312 | B | 3.7 |
| | C | 9.0 |
| | E | -0.6 |
| Q313 | B | 3.7 |
| | C | 9.0 |
| | E | 3.1 |
| Q321 | B | -0.5 |
| | C | 4.1 |
| | E | -0.5 |
| Q324 | B | 2.5 |
| | C | 9.1 |
| | E | 1.8 |
| Q329 | B | 2.9 |
| | C | 8.5 |
| | E | 2.3 |
| Q330 | B | 0.2 |
| | C | 9.0 |
| | E | 2.8 |
| Q331 | B | -0.2 |
| | C | 0.0 |
| | E | 0.0 |
| Q332 | B | 0.0 |
| | C | 0.0 |
| | E | 0.0 |
| Q333 | B | 0.2 |
| | C | 9.0 |
| | E | 0.0 |
| Q334 | B | 8.5 |
| | C | 4.5 |
| | E | 9.1 |

| | | |
|---|---|---|
| Q335 | B | 0.2 |
| | C | 9.0 |
| | E | 3.0 |
| Q336 | B | 0.2 |
| | C | 9.0 |
| | E | 3.0 |


1
2
3
4
5
6
A
B
C
D
E
PST1 B-B20P
PST2 B-B20P
PST3 B-B20P
+12V/+9V
+9V
I302 BA17809
I304 2LINE
Y.OUT
GND
C.OUT
V.IN
+9V
COMP/S-Y BUFFER
C BUFFER
I301 TA8851BN
I305 MM1115XS
CCD SEL
H:YUV
L:NTSC
YUV SEL
CCD SEL
L301
+9V
VIDEO 1.IN
V1
L1
R1
Y1C1
S 1.IN
VIDEO 2.IN
V2
L2
R2
Y2C2
S2.IN
VIDEO 3.IN
V3
L3
R3
TO CONTROL P.W.B
PFT
Y C
S-MONITOR OUT
V L R
MONITOR OUT
Y U/PB V/PR
YUV/YPBPR IN

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

DP86V TERMINAL P.W.B.

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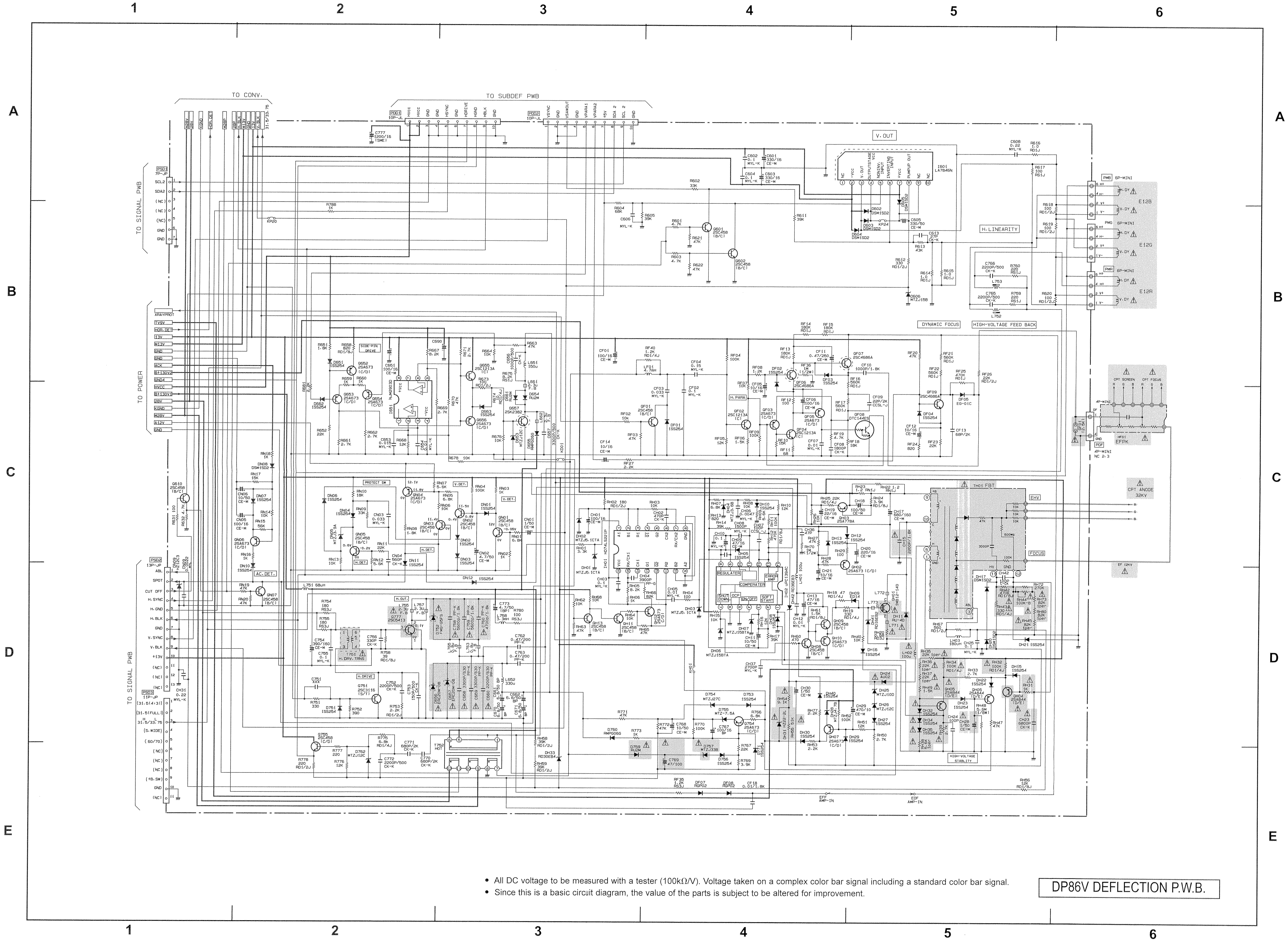
# BASIC CIRCUIT DIAGRAM
## TERMINAL
## DEFLECTION



1
2
3
4
5
6
A
B
C
D
E
TO CONV.
TO SUBDEF PWB
TO SIGNAL PWB
TO POWER
V.OUT
H.LINEARITY
DYNAMIC FOCUS
HIGH-VOLTAGE FEED BACK
PROTECT SW
H.DRIVE
H.DRV.TRANS
HIGH-VOLTAGE STABILITY
TH01 FBT
EHV
FOCUS
CPT ANODE 32KV
E12B
E12G
E12R
EFDK

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

**DP86V DEFLECTION P.W.B.**

| Circuit No. | Pin No. | Voltage VDC |
|---|---|---|
| PDD1 | 1 | 12.1 |
| | 2 | 12.1 |
| | 3 | 0.0 |
| | 4 | 0.0 |
| | 5 | 3.8 |
| | 6 | 0.0 |
| | 7 | 2.3 |
| | 8 | 0.0 |
| | 9 | 1.7 |
| | 10 | 0.0 |
| | 1 | 4.3 |
| | 2 | 0.0 |
| | 3 | 4.9 |
| | 4 | 0.0 |
| | 5 | 7.0 |
| | 6 | 2.1 |
| | 7 | 5.0 |
| | 8 | 4.0 |
| | 9 | 4.1 |
| | 10 | 0.0 |
| QF04 | B | 0.7 |
| | C | 11.8 |
| | E | 0.3 |
| QF05 | B | 11.9 |
| | C | 0.1 |
| | E | 12.3 |
| QF06 | B | 12.4 |
| | C | 406.5 |
| | E | 12.2 |
| QF07 | B | 388.0 |
| | C | 992.0 |
| | E | 282.0 |
| QF08 | B | 0.0 |
| | C | 6.9 |
| | E | 0.0 |
| QF09 | B | 11.7 |
| | C | 391.1 |
| | E | 11.2 |
| QH01 | B | 2.0 |
| | C | 127.3 |
| | E | 0.2 |
| QH02 | B | 12.4 |
| | C | -0.9 |
| | E | 12.3 |
| QH03 | B | 130.0 |
| | C | 1.0 |
| | E | 130.0 |
| QH04 | B | 9.8 |
| | C | 0.0 |
| | E | 10.5 |
| QH05 | B | 11.6 |
| | C | 1.5 |
| | E | 12.2 |
| QH06 | B | 11.3 |
| | C | 1.0 |
| | E | 10.4 |
| QH07 | B | 7.7 |
| | C | 0.3 |
| | E | 7.6 |
| QH08 | B | 0.5 |
| | C | 3.2 |
| | E | 0.0 |
| QH09 | B | 3.2 |
| | C | 12.5 |
| | E | 3.0 |
| QH10 | B | 3.2 |
| | C | 0.0 |
| | E | 3.0 |
| QH11 | B | 0.0 |
| | C | 5.4 |
| | E | 0.0 |
| QH12 | B | 5.3 |
| | C | -0.7 |
| | E | 5.3 |
| QH13 | B | 0.7 |
| | C | 0.0 |
| | E | 0.0 |
| QK01 | B | -12.4 |
| | C | -5.4 |
| | E | -12.9 |
| QK02 | B | 0.0 |
| | C | 0.0 |
| | E | 0.5 |
| QK03 | B | 0.0 |
| | C | -11.4 |
| | E | 0.6 |
| QK06 | B | 0.0 |
| | C | 5.0 |
| | E | 0.0 |
| QK07 | B | 0.0 |
| | C | 5.0 |
| | E | 0.0 |
| QK08 | B | 0.0 |
| | C | 5.0 |
| | E | 0.0 |
| QN01 | B | 0.0 |
| | C | 12.2 |
| | E | 0.0 |
| QN02 | B | 0.9 |
| | C | 12.1 |
| | E | 0.6 |
| QN03 | B | 0.1 |
| | C | 12.1 |
| | E | 0.0 |
| QN04 | B | 12.1 |
| | C | -0.8 |
| | E | 12.1 |
| QN05 | B | -0.2 |
| | C | 0.6 |
| | E | 0.0 |
| QN06 | B | 6.6 |
| | C | -0.6 |
| | E | 6.6 |
| QN07 | B | 0.0 |
| | C | 0.1 |
| | E | 0.0 |
| Q601 | B | 0.0 |
| | C | 3.5 |
| | E | 0.0 |
| Q602 | B | 0.0 |
| | C | 1.9 |
| | E | 0.0 |
| Q610 | B | 0.0 |
| | C | 5.1 |
| | E | 0.0 |
| Q652 | B | 10.6 |
| | C | 8.3 |
| | E | 11.2 |
| Q653 | B | 7.0 |
| | C | 1.0 |
| | E | 7.9 |
| Q654 | B | 7.0 |
| | C | 1.8 |
| | E | 7.6 |
| Q655 | B | 2.8 |
| | C | 12.5 |
| | E | 2.8 |
| Q656 | B | 2.8 |
| | C | 0.0 |
| | E | 2.8 |
| Q657 | B | 2.6 |
| | C | 1.1 |
| | E | 0.0 |
| Q751 | B | 0.5 |
| | C | 18.3 |
| | E | 0.0 |
| Q754 | B | 12.4 |
| | C | 1.0 |
| | E | 6.8 |
| Q755 | B | 1.1 |
| | C | 12.5 |
| | E | 1.7 |
| Q777 | B | 0.0 |
| | C | 113.3 |
| | E | 0.0 |
| QF01 | B | 0.5 |
| | C | -0.1 |
| | E | 0.0 |
| QF02 | B | 1.3 |
| | C | 6.7 |
| | E | 6.8 |
| QF03 | B | 7.0 |
| | C | 0.9 |
| | E | 7.1 |
| Q701 | B | 0.4 |
| | C | 2.3 |
| | E | 0.0 |

# BASIC CIRCUIT DIAGRAM
## SUB-DEFLECTION
## POWER SUPPLY

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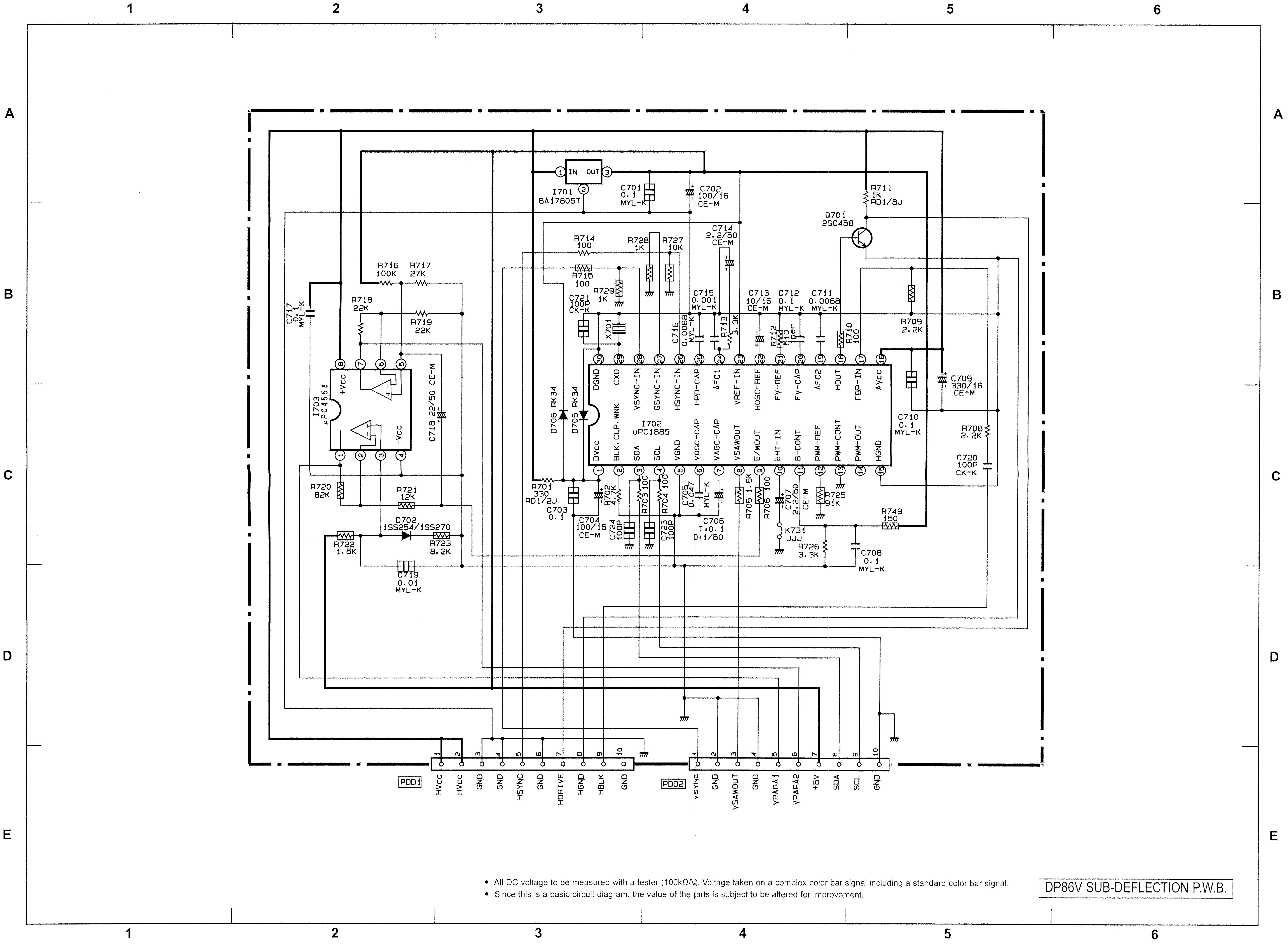
| Circuit No. | Pin No. | Voltage VDC |
|---|---|---|
| I701 | 1 | 12.1 |
|  | 2 | 0.0 |
|  | 3 | 5.0 |

| Circuit No. | Pin No. | Voltage VDC | Pin No. | Voltage VDC |
|---|---|---|---|---|
| I702 | 1 | 2.4 | 16 | 12.1 |
|  | 2 | 0.1 | 17 | 0.0 |
|  | 3 | 1.2 | 18 | 0.4 |
|  | 4 | 4.1 | 19 | 6.9 |
|  | 5 | 0.0 | 20 | 2.2 |
|  | 6 | 4.0 | 21 | 0.8 |
|  | 7 | 5.4 | 22 | 1.3 |
|  | 8 | 4.9 | 23 | 5.0 |
|  | 9 | 3.8 | 24 | 4.3 |
|  | 10 | 5.0 | 25 | 3.4 |
|  | 11 | 4.7 | 26 | 3.8 |
|  | 12 | 5.0 | 27 | 1.1 |
|  | 13 | 0.0 | 28 | 4.0 |
|  | 14 | 12.0 | 29 | 0.4 |
|  | 15 | 0.0 | 30 | 0.0 |

| Circuit No. | Pin No. | Voltage VDC |
|---|---|---|
| I703 | 1 | 7.9 |
|  | 2 | 4.3 |
|  | 3 | 4.3 |
|  | 4 | 0.0 |
|  | 5 | 1.0 |
|  | 6 | 1.0 |
|  | 7 | 2.1 |
|  | 8 | 12.1 |


1
2
3
4
5
6
A
B
C
D
E
I701
BA17805T
IN
OUT
C701 0.1 MYL-K
C702 100/16 CE-M
R711 1K RD1/8J
Q701 2SC458
C714 2.2/50 CE-M
R714 100
R715 100
R728 1K
R727 10K
R729 1K
C721 100P CK-K
X701
C716 0.0068 MYL-K
C715 0.001 MYL-K
R713 3.3K
C713 10/16 CE-M
C712 0.1 MYL-K
C711 0.0068 MYL-K
R712 510 1per
R710 100
R709 2.2K
C709 330/16 CE-M
C710 0.1 MYL-K
R708 2.2K
C720 100P CK-K
I702
uPC1885
DGND
CXO
VSYNC-IN
GSYNC-IN
HSYNC-IN
HPD-CAP
AFC1
VREF-IN
HOSC-REF
FV-REF
FV-CAP
AFC2
HOUT
FBP-IN
AVcc
DVcc
BLK.CLP.WNK
SDA
SCL
VGND
VOSC-CAP
VAGC-CAP
VSAWOUT
E/WOUT
EHT-IN
B-CONT
PWM-REF
PWM-CONT
PWM-OUT
HGND
D706 RK34
D705 RK34
R701 330 RD1/2J
C703 0.1
R702 4.7K
C704 100/16 CE-M
C724 100P
R703 100
R704 100
C723 100P
C705 0.047 MYL-K
C706 T:0.1 D:1/50
R705 1.5K
R706 100
C707 2.2/50 CE-M
R725 91K
K731 JJJ
R726 3.3K
C708 0.1 MYL-K
R749 150
I703
μPC4558
+Vcc
-Vcc
C717 0.1 MYL-K
R716 100K
R717 27K
R718 22K
R719 22K
C718 22/50 CE-M
R720 82K
R721 12K
D702 1SS254/1SS270
R722 1.5K
R723 8.2K
C719 0.01 MYL-K
PDD1
HVcc
HVcc
GND
GND
HSYNC
GND
HDRIVE
HGND
HBLK
GND
PDD2
VSYNC
GND
VSAWOUT
GND
VPARA1
VPARA2
+5V
SDA
SCL
GND

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

DP86V SUB-DEFLECTION P.W.B.

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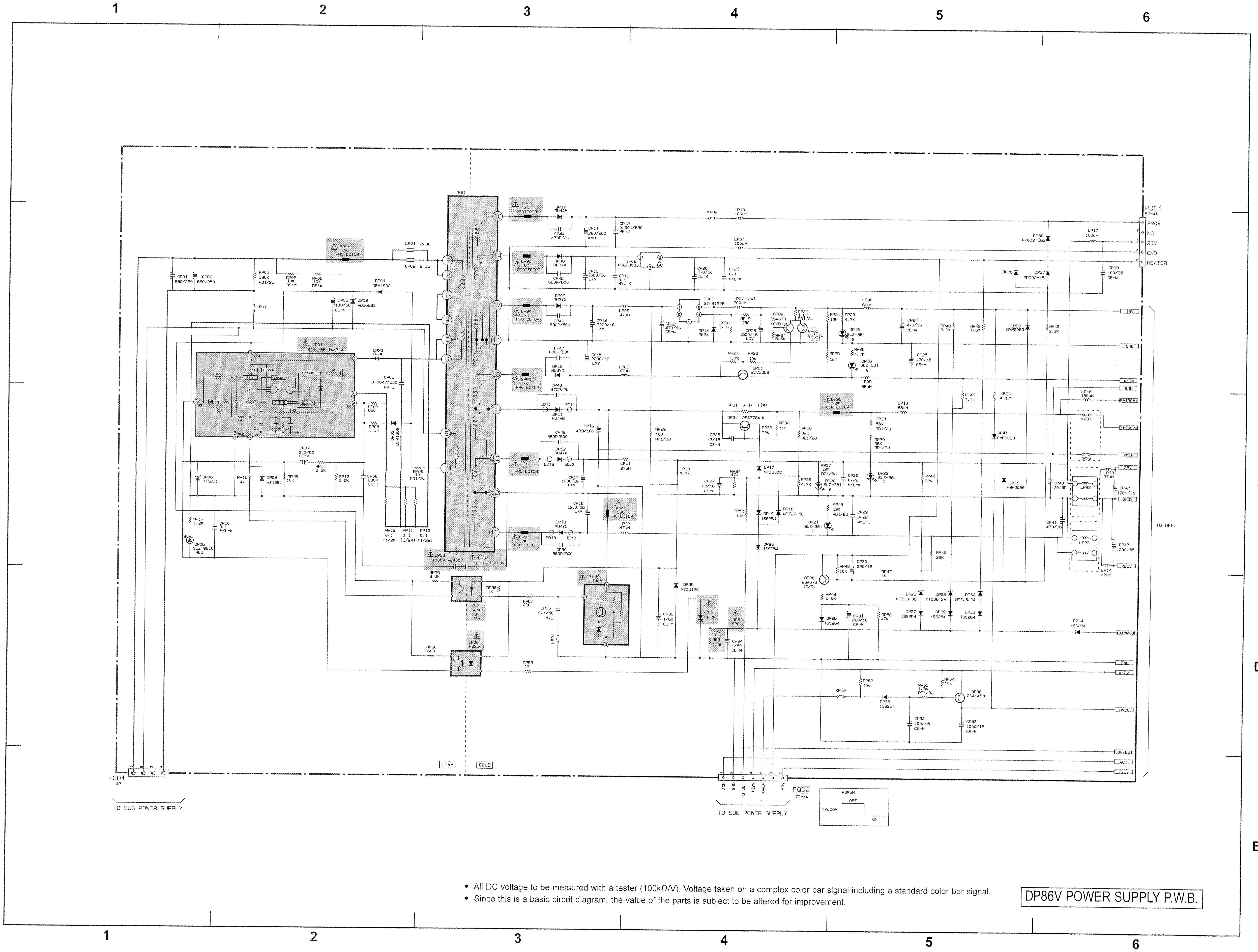
# BASIC CIRCUIT DIAGRAM
## SUB-DEFLECTION
## POWER SUPPLY


1
2
3
4
5
6
A
B
C
D
E
PQD1
4P
TO SUB POWER SUPPLY
LIVE
COLD
PQD2
7P-XA
TO SUB POWER SUPPLY
POWER
OFF
ON
TV/COM
PDC1
5P-XA
220V
NC
28V
GND
HEATER
TO DEF.
TP91
IP01
STR-M6811A/31A
IP02
IP03
IP04
SE130N
IP05
PS2501
IP06
PS2501
PROTECTOR

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

DP86V POWER SUPPLY P.W.B.

| Circuit No. | Pin No. | Voltage VDC |
|---|---|---|
| IP01 | 1 | 61.1 |
| | 2 | -59.2 |
| | 3 | -59.3 |
| | 4 | -62.8 |
| | 5 | -41.9 |
| | 6 | -58.8 |
| | 7 | -57.8 |
| IP02 | 1 | 7.3 |
| | 2 | 6.3 |
| | 3 | 0.0 |
| | 4 | 2.5 |
| IP03 | 1 | 14.7 |
| | 2 | 12.7 |
| | 3 | 0.0 |
| | 4 | 11.9 |
| | 5 | 2.2 |
| IP04 | 1 | 130.3 |
| | 2 | 11.2 |
| | 3 | 0.0 |
| IP05 | 1 | 12.4 |
| | 2 | 11.4 |
| | 3 | -58.5 |
| | 4 | -52.0 |
| IP06 | 1 | 12.5 |
| | 2 | 12.0 |
| | 3 | -57.0 |
| | 4 | -41.8 |

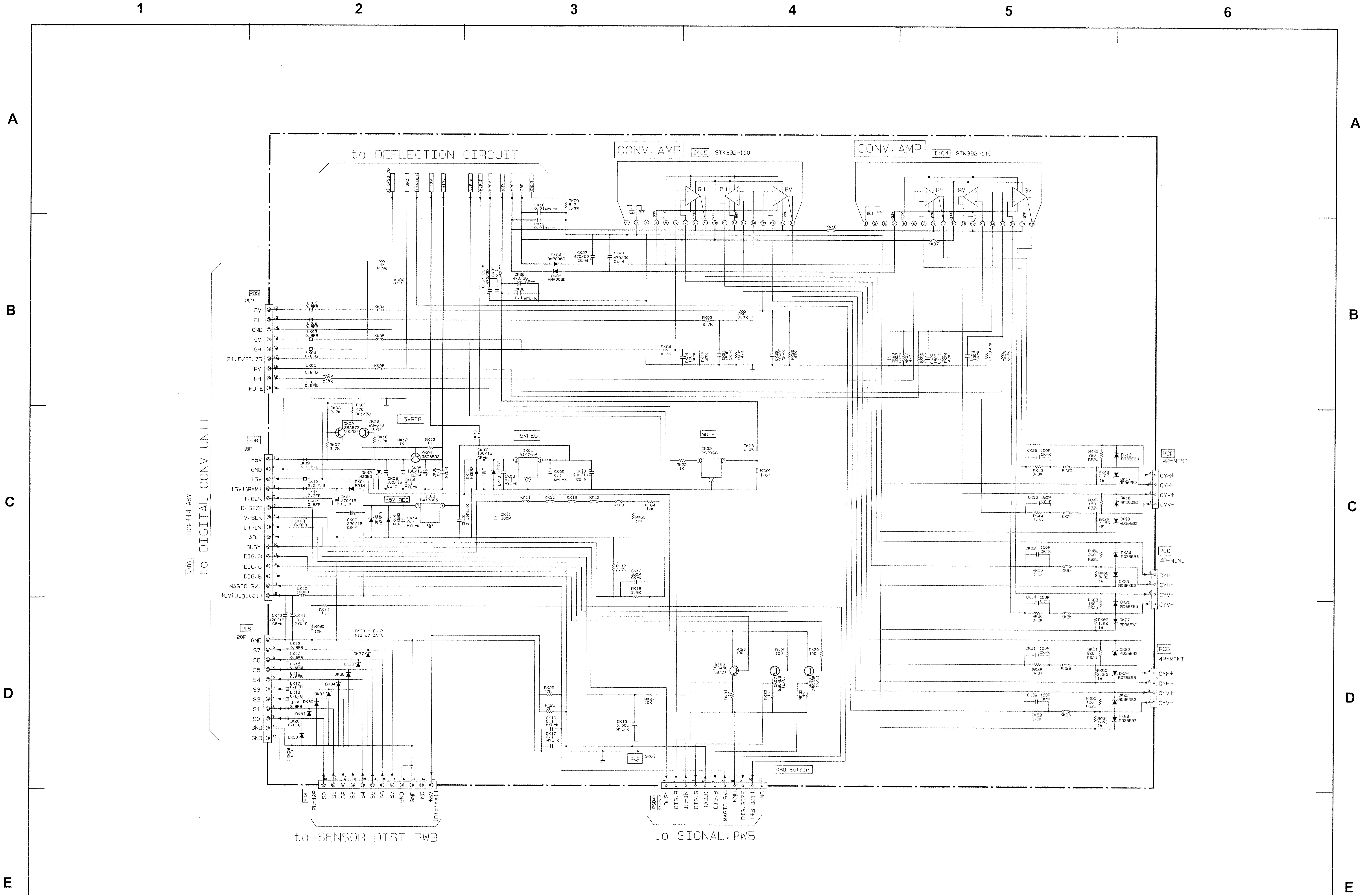
| | | |
|---|---|---|
| QP01 | B | -14.0 |
| | C | -13.2 |
| | E | -14.7 |
| QP02 | B | 0.1 |
| | C | -7.1 |
| | E | 0.6 |
| QP03 | B | 0.0 |
| | C | 0.0 |
| | E | 0.6 |
| QP04 | B | 129.9 |
| | C | 1.1 |
| | E | 130.3 |
| QP05 | B | 0.0 |
| | C | 12.0 |
| | E | 0.3 |
| QP06 | B | 6.3 |
| | C | 0.0 |
| | E | 6.3 |
| QP08 | B | 11.4 |
| | C | 12.1 |
| | E | 12.1 |

# BASIC CIRCUIT DIAGRAM
## CONVERGENCE
# PRINTED CIRCUIT BOARD
## SIGNAL P.W.B.

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

| Circuit No. | Pin No. | Voltage VDC |
|---|---|---|
| IK01 | 1 | 9.4 |
| | 2 | 0 |
| | 3 | 4.9 |
| IK02 | 1 | 4.4 |
| | 2 | 6.6 |
| | 3 | 0 |
| IK03 | 1 | 9.4 |
| | 2 | 0 |
| | 3 | 5.1 |
| IK04 | 1 | 0 |
| | 2 | 0 |
| | 3 | -29.2 |
| | 4 | -30.3 |
| | 5 | 31.7 |
| | 6 | -0.1 |
| | 7 | -0.1 |
| | 8 | -25.9 |
| | 9 | -0.1 |
| | 10 | 26.8 |
| | 11 | -0.6 |
| | 12 | -25.9 |
| | 13 | -0.4 |
| | 14 | -0.5 |
| | 15 | -0.4 |
| | 16 | -0.4 |
| | 17 | -25.9 |
| | 18 | -0.5 |
| IK05 | 1 | 0 |
| | 2 | 0 |
| | 3 | -29.2 |
| | 4 | -30.3 |
| | 5 | 31.7 |
| | 6 | -0.2 |
| | 7 | -0.2 |
| | 8 | -26.0 |
| | 9 | -0.3 |
| | 10 | 26.8 |
| | 11 | -0.5 |
| | 12 | -26.0 |
| | 13 | -0.4 |
| | 14 | -0.4 |
| | 15 | -0.4 |
| | 16 | -0.4 |
| | 17 | -26.0 |
| | 18 | -0.5 |

| Circuit No. | Pin No. | Voltage VDC |
|---|---|---|
| QK01 | B | -12.0 |
| | C | -5.2 |
| | E | -12.6 |
| QK02 | B | 0 |
| | C | 0 |
| | E | 0.5 |
| QK03 | B | 0 |
| | C | -11.4 |
| | E | 0.6 |
| QK06 | B | 0 |
| | C | 4.9 |
| | E | 0 |
| QK07 | B | 0 |
| | C | 4.9 |
| | E | 0 |
| QK08 | B | 0 |
| | C | 4.9 |
| | E | 0 |


1
2
3
4
5
6
A
B
C
D
E
to DEFLECTION CIRCUIT
31.5/33.75
GND
HOR.DET
13V
M13V
V.BLK
H.BLK
M28V
28V
M28P
28P
KGND
CONV. AMP
IK05 STK392-110
GH
BH
BV
CONV. AMP
IK04 STK392-110
RH
RV
GV
UKDG
HC2114 ASY
to DIGITAL CONV UNIT
PDS 20P
BV
BH
GND
GV
GH
31.5/33.75
RV
RH
MUTE
PDG 15P
-5V
GND
+5V
+5V(SRAM)
H.BLK
D.SIZE
V.BLK
IR-IN
ADJ
BUSY
DIG.R
DIG.G
DIG.B
MAGIC SW.
+5V(Digital)
PDS 20P
GND
S7
S6
S5
S4
S3
S2
S1
S0
GND
GND
-5VREG
+5VREG
+5V REG
MUTE
QK02 2SA673 (C/D)
QK03 2SA673 (C/D)
QK01 2SC3852
IK01 BA17805
IK02 PST9142
IK03 BA17805
QK06 2SC458 (B/C)
QK07 2SC458 (B/C)
QK08 2SC458 (B/C)
DK30 ~ DK37 MTZ-J7.5A74
SK01
OSD Buffer
PCR 4P-MINI
PCG 4P-MINI
PCB 4P-MINI
CYH+
CYH-
CYV+
CYV-
PDS1 PH-12P
S0
S1
S2
S3
S4
S5
S6
S7
GND
GND
NC
+5V (Digital)
to SENSOR DIST PWB
PSD4 11P-JP
BUSY
DIG.R
IR-IN
DIG.G
(ADJ)
DIG.B
MAGIC SW.
GND
DIG.SIZE
(+B DET)
NC
to SIGNAL.PWB

XXX: NO ASSEMBLY

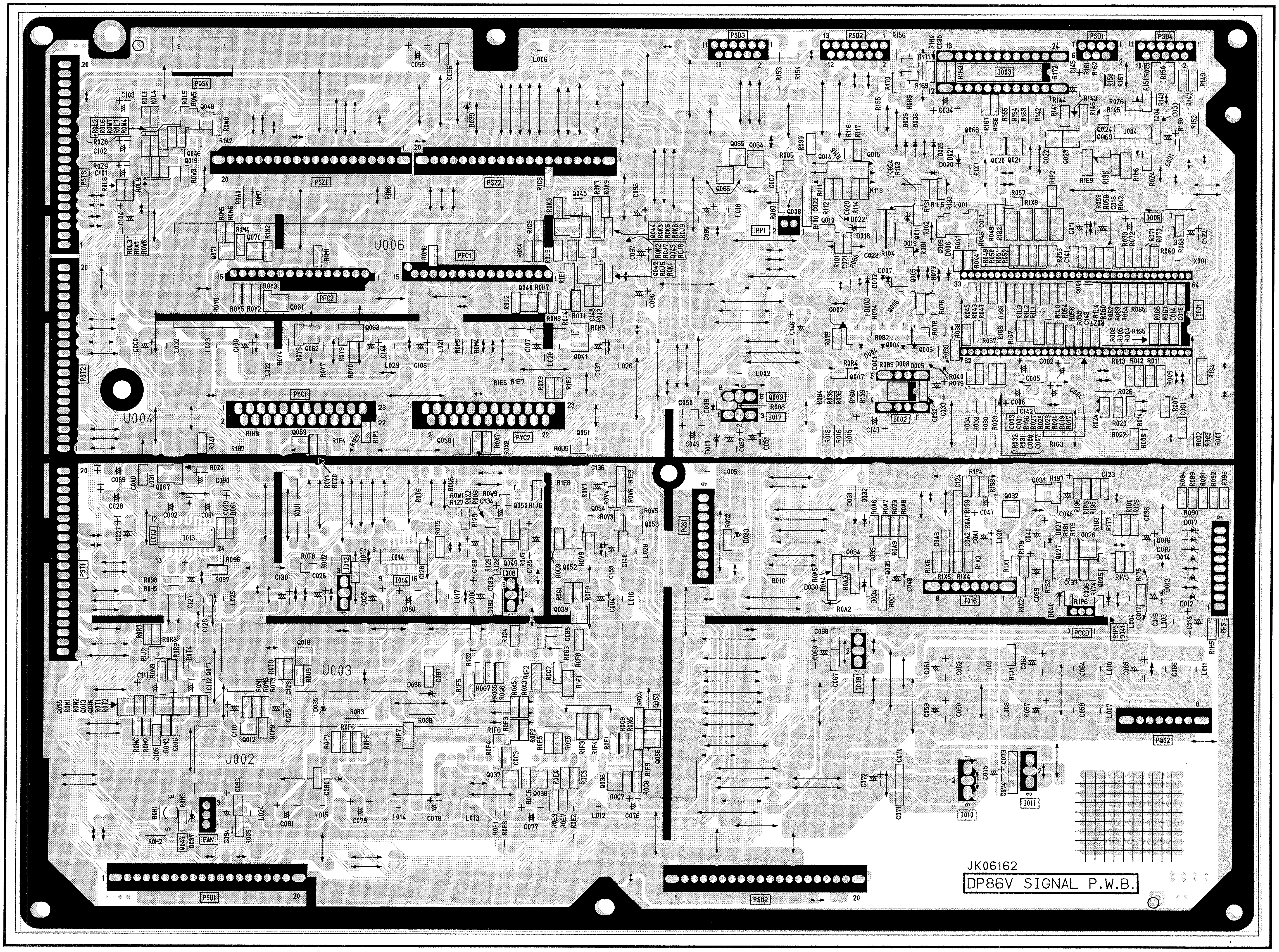
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

**DP86V CONVERGENCE P.W.B.**

1 2 3 4 5 6

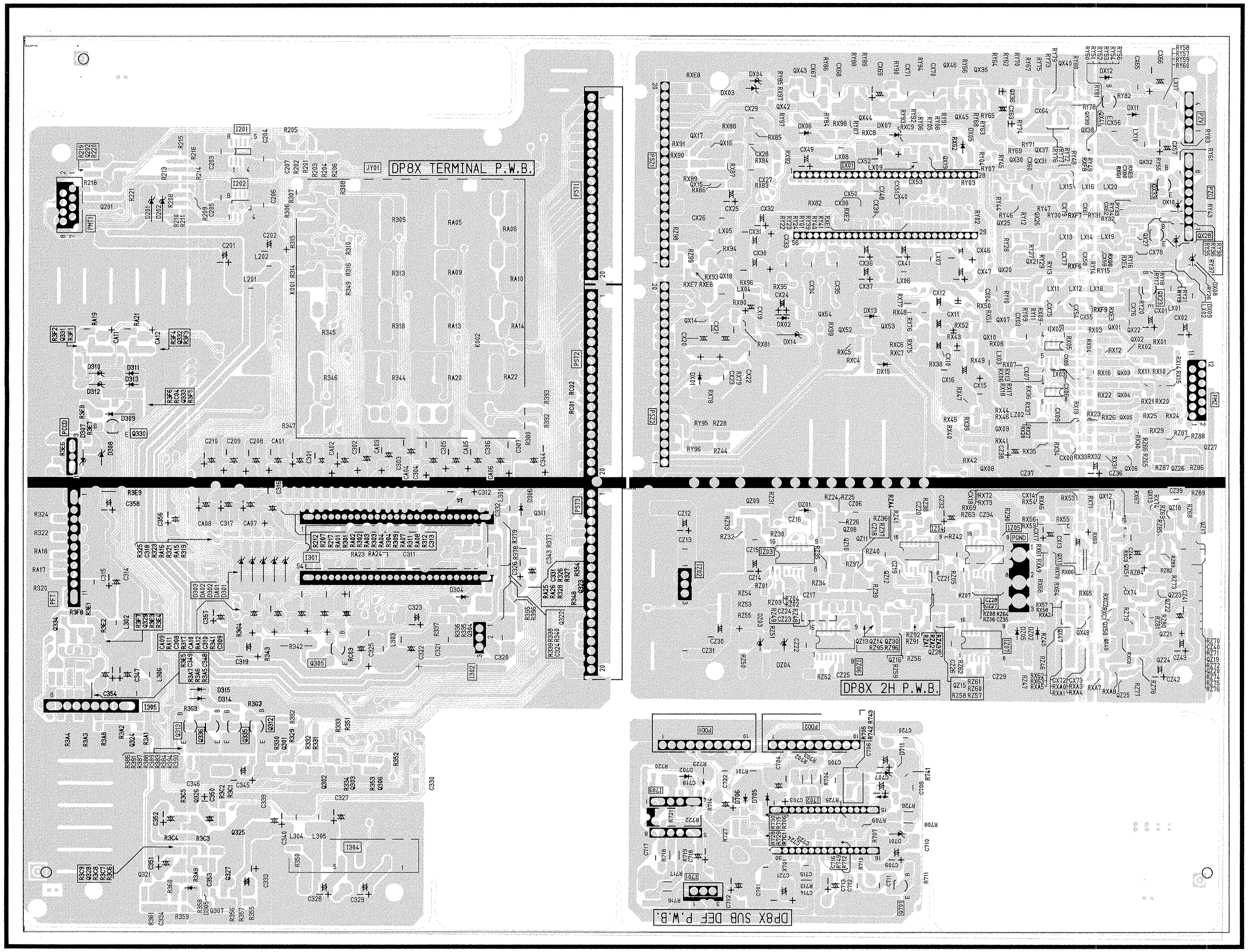
# BASIC CIRCUIT DIAGRAM
### CONVERGENCE
# PRINTED CIRCUIT BOARD
### SIGNAL P.W.B.

SIGNAL P.W.B.


U006
U004
U003
U002
PSZ1
PSZ2
PYC1
PYC2
PSU1
PSU2
PSD1
PSD2
PSD3
PSD4
PST1
PST2
PST3
PQS1
PQS2
PQS4
PFC1
PFC2
PCCD
PFS
I001
I002
I003
I004
I005
I008
I009
I010
I011
I012
I013
I014
I016
I017
JK06162
DP86V SIGNAL P.W.B.

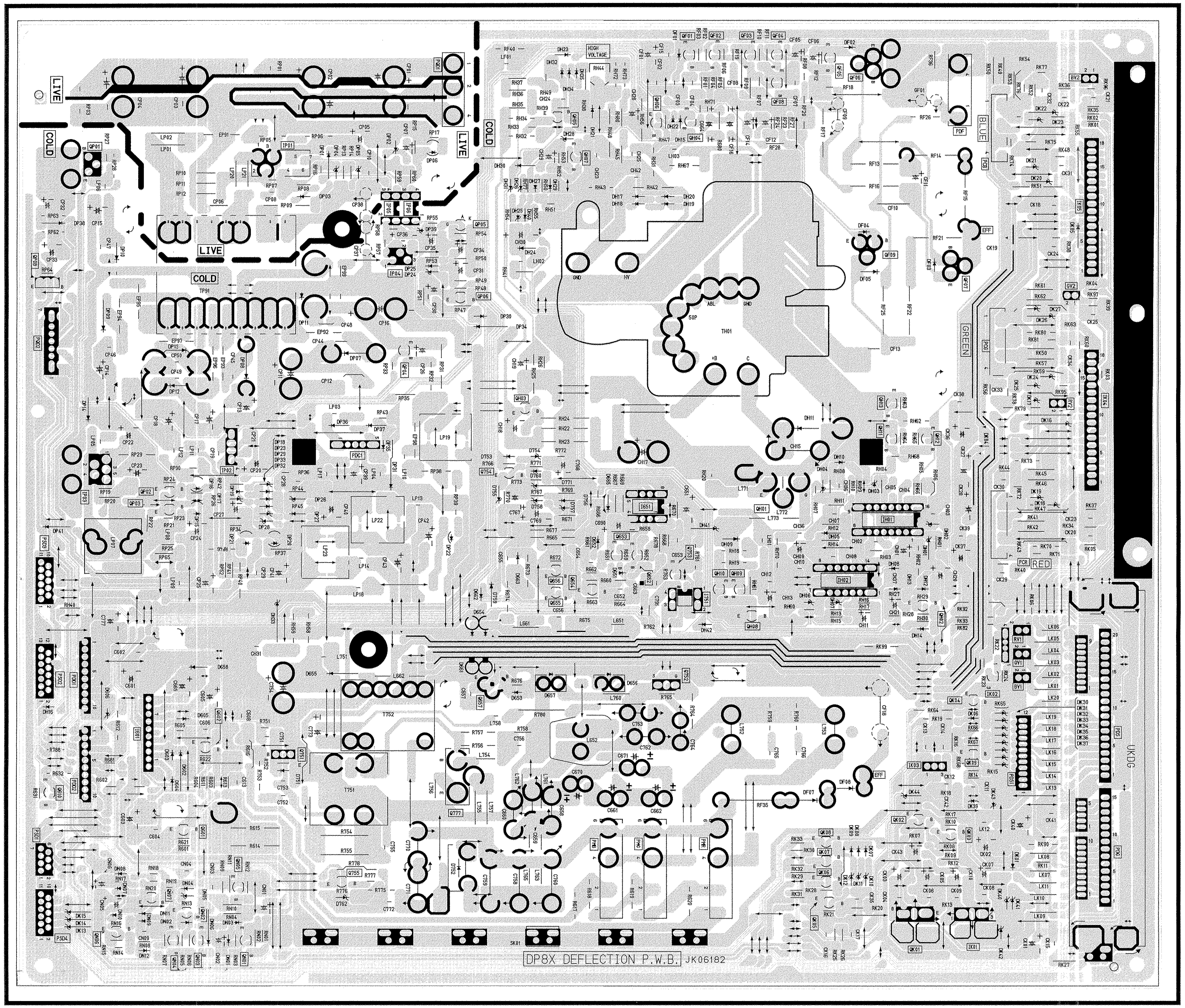
# PRINTED CIRCUIT BOARD

## TERMINAL P.W.B.


DP8X TERMINAL P.W.B.
DP8X 2H P.W.B.
DP8X SUB DEF P.W.B.

# PRINTED CIRCUIT BOARD

POWER/DEFLECTION P.W.B.


LIVE
COLD
LIVE
COLD
LIVE
COLD
HIGH VOLTAGE
BLUE
GREEN
RED
UKDG
GND
HV
ABL
GND
SOP
TH01
+B
C
DP8X DEFLECTION P.W.B.
JK06182

# REPLACEMENT PARTS LIST

**PRODUCT SERVICE NOTE:** Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

## ABBREVIATIONS

**Capacitors:**

CD: Ceramic Disc
PF: Polyester Film
EL: Electrolytic
PP: Polypropylene
PR: Paper
TA: Tantalum
TM: Trimmer
MC: Mylar

**Resistors:**

CF: Carbon Film
CC: Carbon Composition
MF: Metal Oxide Film
VR: Variable Resistor
WW: Wire Wound
FR: Fuse Resistor
MG: Metal Glaze

**Semiconductors:**

TR: Transistor
DI: Diode
ZD: Zener Diode
VA: Varistor
TH: Thermistor
IC: Integrated Circuit

| SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|
| | | **CAPACITORS** |
| C001 | 0228060R | CAP 2125 CHIP 180PF-J CH 50V TAPE |
| C002 | 0800277R | CAP.-ELECTORO. 0.47UF-M 50V |
| C003 | 0228066R | CAP MINI-CHIP 330PF-J CH 50V TAPE |
| C004 | 0800277R | CAP.-ELECTORO. 0.47UF-M 50V |
| C005 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| C006 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| C007 | 0893035R | CAP2125CHIP 2200PFKB 50V TAPE |
| C008 | 0893035R | CAP2125CHIP 2200PFKB 50V TAPE |
| C009 | 0228042R | CAP 2125CHIP 33PFJCH 50V TAPE |
| C010 | 0228042R | CAP 2125CHIP 33PFJCH 50V TAPE |
| C011 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| C012 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| C013 | 0893044R | CAP2125CHIP 10000PFKB 50V TAPE |
| C014 | 0228042R | CAP 2125CHIP 33PFJCH 50V TAPE |
| C015 | 0228042R | CAP 2125CHIP 33PFJCH 50V TAPE |
| C016 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| C017 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE |
| C018 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| C021 | 0228054R | CAP 2125 CHIP 100PFJCH 50V TAPE |
| C022 | 0228076R | CAP MINI-CHIP 820PF-J CH 50V TAPE |
| C023 | 0228054R | CAP 2125 CHIP 100PFJCH 50V TAPE |
| C024 | 0228058R | CAP 2125 CHIP 150PF-J CH 50V TAPE |
| C025 | 0800315R | CAP.-ELECTRO. 47UF-M(SMG) 6.3V |
| C026 | 0800315R | CAP.-ELECTRO. 47UF-M(SMG) 6.3V |
| C027 | 0284667R | CAP.-ELECTRO. 47UF-MBPR(SME)16V |
| C028 | 0284667R | CAP.-ELECTRO. 47UF-MBPR(SME)16V |
| C029 | 0893035R | CAP2125CHIP 2200PFKB 50V TAPE |
| C030 | 0893053R | CAP2125CHIP 47000PFKB 50V TAPE |
| C031 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| C032 | 0893053R | CAP2125CHIP 47000PFKB 50V TAPE |
| C033 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| C034 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| C035 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE |
| C037 | 0893031R | CAP 2125CHIP 1000PFKB 50V TAPE |
| C038 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| C048 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| C049 | 0800361N | CAP.-ELECTRO 1000UF 16V |
| C050 | 0893044R | CAP2125CHIP 10000PFKB 50V TAPE |
| C051 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| C052 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| C053 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| C059 | 0800361N | CAP.-ELECTRO 1000UF 16V |
| C060 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| C061 | 0800358R | CAP.-ELECTRO. 1000UF-M 6.3V |
| C062 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| C070 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE |
| C071 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE |
| C072 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| C076 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| C077 | 0800361N | CAP.-ELECTRO 1000UF 16V |
| C078 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| C079 | 0800358R | CAP.-ELECTRO. 1000UF-M 6.3V |
| C080 | 0893053R | CAP2125CHIP 47000PFKB 50V TAPE |
| C081 | 0800361N | CAP.-ELECTRO 1000UF 16V |
| C082 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE |
| C083 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE |
| C084 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| C085 | 0228070R | CAP MINI-CHIP 470PF-J CH 50V TAPE |
| C086 | 0800358R | CAP.-ELECTRO. 1000UF-M 6.3V |
| C087 | 0893053R | CAP2125CHIP 47000PFKB 50V TAPE |
| C088 | 0800361N | CAP.-ELECTRO 1000UF 16V |
| C089 | 0284667R | CAP.-ELECTRO. 47UF-MBPR(SME)16V |
| C090 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |

# REPLACEMENT PARTS LIST

**PRODUCT SERVICE NOTE:** Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

| SYMBOL NO. | PART NO. | PART DESCRIPTION | SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|---|---|---|
| C091 | 0284667R | CAP.-ELECTRO. 47UF-MBPR(SME)16V | C304 | 0893044R | CAP2125CHIP 10000PFKB 50V TAPE |
| C092 | 0284667R | CAP.-ELECTRO. 47UF-MBPR(SME)16V | C305 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| C093 | 0893053R | CAP2125CHIP 47000PFKB 50V TAPE | C306 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| C094 | 0800326R | CAP.-ELECTRO. 100UF-M 16V | C307 | 0893044R | CAP2125CHIP 10000PFKB 50V TAPE |
| C095 | 0800326R | CAP.-ELECTRO. 100UF-M 16V | C308 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| C096 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V | C309 | 0284638R | CAP.-ELECTRO. 10UF-SME(BP) 16V |
| C097 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V | C310 | 0800299R | CAP.-ELECTRO. 22UF-M(SMG) 16V |
| C098 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V | C311 | 0228008R | CAP 2125 CHIP 8PF-C CH 50V TAPE |
| C099 | 0228070R | CAP MINI-CHIP 470PF-J CH 50V TAPE | C312 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| C0A0 | 0228738R | CAP2125CHIP 22PFJSL 50V TAPE | C313 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE |
| C0A1 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V | C314 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| C0A2 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE | C315 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| C0A3 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE | C316 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| C0C0 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V | C317 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| C0C1 | 0893044R | CAP2125CHIP 10000PFKB 50V TAPE | C318 | 0893044R | CAP2125CHIP 10000PFKB 50V TAPE |
| C0C2 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE | C319 | 0800352R | CAP.-ELECTRO.470UF 10V |
| C0C3 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE | C320 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| C101 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V | C321 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| C102 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V | C322 | 0800352R | CAP.-ELECTRO.470UF 10V |
| C103 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V | C325 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| C104 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V | C326 | 0800299R | CAP.-ELECTRO. 22UF-M(SMG) 16V |
| C105 | 0893033R | CAP 2125CHIP 1500PFKB 50V TAPE | C327 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| C106 | 0228070R | CAP MINI-CHIP 470PF-J CH 50V TAPE | C328 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| C107 | 0800326R | CAP.-ELECTRO. 100UF-M 16V | C329 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| C108 | 0800326R | CAP.-ELECTRO. 100UF-M 16V | C330 | 0893044R | CAP2125CHIP 10000PFKB 50V TAPE |
| C109 | 0800326R | CAP.-ELECTRO. 100UF-M 16V | C333 | 0284638R | CAP.-ELECTRO. 10UF-SME(BP) 16V |
| C110 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V | C334 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE |
| C111 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V | C339 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE |
| C122 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V | C340 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| C126 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE | C345 | 0800352R | CAP.-ELECTRO.470UF 10V |
| C127 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V | C346 | 0893044R | CAP2125CHIP 10000PFKB 50V TAPE |
| C128 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE | C347 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| C133 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V | C348 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE |
| C134 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V | C349 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE |
| C135 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V | C354 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| C136 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V | C356 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| C137 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V | C357 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| C138 | 0800351R | CAP.-ELECTRO. 470UF-M 6.3V | C601 | 0800344R | CAP.-ELECTRO. 330UF-M(SMG) 16V |
| C139 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V | C602 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| C140 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE | C603 | 0800344R | CAP.-ELECTRO. 330UF-M(SMG) 16V |
| C141 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE | C604 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| C142 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE | C605 | 0800347N | CAP.-ELECTRO. 330UF-M(SMG) 50V |
| C143 | 0893044R | CAP2125CHIP 10000PFKB 50V TAPE | C606 | AN00611R | CAP.POLYSTYLENE 0.001UF 50V TAPE |
| C144 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V | C608 | 0880198R | CAP.-PLOY. 0.22UF-J 50V |
| C145 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V | C613 | 0890066R | CAP.CERAMIC 27PF-J 50V |
| C146 | 0800324R | CAP.-ELECTRO. 100UF-M(SMG) 6.3V | C651 | 0800361N | CAP.-ELECTRO 1000UF 16V |
| C147 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V | C653 | AN00626R | CAP.POLYESTER 0.015UF 50V TAPE |
| C148 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE | C654 | AN00624R | CAP.POLYESTER 0.01UF 50V TAPE |
| C208 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V | C656 | 0244501R | CAP.-CERAMIC 1000PF-K 500V |
| C209 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V | C657 | 0244507R | CAP.-CERAMIC 3300PF-KB B 500V |
| C210 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V | ⚠ C658 | 0299975F | CAP-POLYPROPYLENE 0.0033MF 630V |
| C301 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V | ⚠ C659 | 0299975F | CAP-POLYPROPYLENE 0.0033MF 630V |
| C302 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V | ⚠ C660 | 0299978F | CAP-POLYPROPYLENE 0.0056UF-J 630V |
| C303 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V | C661 | 0259471 | CAP.-ELECTRO 6.8UF-M (BP) 50V |

# REPLACEMENT PARTS LIST

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| SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|
| C662 | 0259471 | CAP.-ELECTRO 6.8UF-M (BP) 50V |
| C670 | 0259471 | CAP.-ELECTRO 6.8UF-M (BP) 50V |
| C671 | 0259471 | CAP.-ELECTRO 6.8UF-M (BP) 50V |
| C701 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE |
| C702 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| C703 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE |
| C704 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| C705 | AN00633R | CAP.POLYESTER 0.047UF 50V TAPE |
| C706 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| C707 | 0800282R | CAP.-ELECTORO. 2.2UF-M(SMG) 50V |
| C708 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| C709 | 0800344R | CAP.-ELECTRO. 330UF-M(SMG) 16V |
| C710 | 0893027R | CAP 2125 CHIP 100000PF-K B 25V TAPE |
| C711 | AN00622R | CAP.POLYESTER 0.0068UF 50V TAPE |
| C712 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| C713 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| C714 | 0800282R | CAP.-ELECTORO. 2.2UF-M(SMG) 50V |
| C715 | AN00611R | CAP.POLYSTYLENE 0.001UF 50V TAPE |
| C716 | 0893042R | CAP 2125CHIP 6800PFKB 50V TAPE |
| C717 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| C718 | 0800303R | CAP.-ELECTRO. 22UF-M 50V |
| C719 | 0893044R | CAP2125CHIP 10000PFKB 50V TAPE |
| C720 | 0890074R | CAP.-CERAMIC 100PF-J 50V |
| C721 | 0228054R | CAP 2125 CHIP 100PFJCH 50V TAPE |
| C723 | 0228054R | CAP 2125 CHIP 100PFJCH 50V TAPE |
| C724 | 0228054R | CAP 2125 CHIP 100PFJCH 50V TAPE |
| C752 | 0244505R | CAP-CERAMIC 0.0022UF-K 500V |
| C753 | 0243503R | CAP.-CERAMIC 150PF-K B 500V |
| C754 | 0251703 | CAP.ELECTRO 390UF-M 160V(KMH) |
| C755 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| C756 | 0890081R | CAP.-CERAMIC 330PF 50V |
| ⚠ C758 | AN01131F | METALLIZ PP FILM CAPACITOR0.0056UF |
| ⚠ C759 | AN01131F | METALLIZ PP FILM CAPACITOR0.0056UF |
| ⚠ C760 | AN01128F | METALLIZ PP FILM CAPACITOR0.0047UF |
| C762 | AN01178F | METALLIZ PP FILM CAPACITOR 0.47UF |
| C763 | AN01178F | METALLIZ PP FILM CAPACITOR 0.47UF |
| C765 | 0244505R | CAP-CERAMIC 0.0022UF-K 500V |
| C766 | 0244505R | CAP-CERAMIC 0.0022UF-K 500V |
| C767 | 0284677R | CAP.-ELECTORO. 100UF-M (BP) 16V |
| C768 | 0800294R | CAP.-ELECTRO. 10UF-M(SMG) 50V |
| C769 | 0800323R | CAP.-ELECTRO. 47UF-M 100V |
| C770 | AJ00132R | CAPACITOR CERAMIC 680P DC2K-R |
| C771 | AJ00132R | CAPACITOR CERAMIC 680P DC2K-R |
| C772 | 0244505R | CAP-CERAMIC 0.0022UF-K 500V |
| C773 | 0284634R | CAP.-ELECTRO 4.7UF-SME(BP) 50V |
| C777 | AL00793S | CAP.EL.S-LEAD 1200UF-M(LXV) 16V |
| CA01 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| CA02 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| CA03 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| CA04 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| CA05 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| CA06 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| CA07 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| CA08 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| CA09 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| CA10 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| CA11 | 0800294R | CAP.-ELECTRO. 10UF-M(SMG) 50V |
| CA12 | 0800294R | CAP.-ELECTRO. 10UF-M(SMG) 50V |
| CF01 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| CF02 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CF03 | AN00631R | CAP.POLYESTER 0.033UF 50V TAPE |
| CF04 | 0880196R | CAP.-POLYESTER 0.15UF 50V HFT |
| CF05 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| CF06 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| CF07 | AN00624R | CAP.POLYESTER 0.01UF 50V TAPE |
| CF08 | AN00614R | CAP.POLYESTER 0.0018UF 50V TAPE |
| CF09 | 0245156 | CAPACITOT CERAMIC 22PF/2KV |
| CF10 | AN01111F | METALLIZ PP FILM CAPACITOR0.001UF |
| CF11 | 0255520R | CAP.-ELECTRO 0.47UF 250V(KME) |
| CF12 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| CF13 | 0245158 | CAPACITOT CERAMIC 68PF/2KV |
| CF14 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| CF18 | AN01137F | METALLIZ PP FILM CAPACITOR0.01UF |
| CH01 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| CH02 | 0249093R | CAPACITOR-CERAMIC 470PF-J SL 50WV |
| CH03 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CH04 | 0299015R | CAP.-POLY. 3900PF-G 100V |
| CH05 | AN00624R | CAP.POLYESTER 0.01UF 50V TAPE |
| CH06 | AN00619R | CAP.POLYESTER 0.0047UF 50V TAPE |
| CH07 | 0890074R | CAP.-CERAMIC 100PF-J 50V |
| CH08 | AN00613R | CAP.POLYESTER 0.0015UF 50V TAPE |
| CH09 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| CH10 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CH11 | 0800294R | CAP.-ELECTRO. 10UF-M(SMG) 50V |
| CH12 | AN00624R | CAP.POLYESTER 0.01UF 50V TAPE |
| CH13 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| ⚠ CH15 | AN01119F | METALLIZ PP FILM CAPACITOR0.0022UF |
| CH17 | 0251709 | CAP.ELECTRO 680UF 160V (KMH) |
| CH18 | 0800329R | CAP.-ELECTRO. 100UF-M(SMG) 50V |
| CH19 | 0800299R | CAP.-ELECTRO. 22UF-M(SMG) 16V |
| CH20 | 0800335R | CAP.-ELECTRO. 220UF-M(SMG) 16V |
| CH21 | 0800291R | CAP.-ELECTRO. 10UF-M(SMG) 16V |
| ⚠ CH23 | AN00622R | CAP.POLYESTER 0.0068UF 50V TAPE |
| CH24 | 0890074R | CAP.-CERAMIC 100PF-J 50V |
| CH25 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| ⚠ CH28 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| CH29 | 0800352R | CAP.-ELECTRO.470UF 10V |
| CH30 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| CH31 | 0880198R | CAP.-PLOY. 0.22UF-J 50V |
| CH36 | 0890069R | CAP.-CERAMIC 47PF-J 50V |
| CH37 | AN00616R | CAP.POLYESTER 0.0027UF 50V TAPE |
| CH42 | 0890074R | CAP.-CERAMIC 100PF-J 50V |
| CK01 | 0800353R | CAP.-ELECTRO.470UF-M 16V |
| CK02 | 0800335R | CAP.-ELECTRO. 220UF-M(SMG) 16V |
| CK03 | 0800335R | CAP.-ELECTRO. 220UF-M(SMG) 16V |
| CK04 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CK05 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| CK06 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CK07 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| CK08 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |

# REPLACEMENT PARTS LIST

**PRODUCT SERVICE NOTE:** Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

| SYMBOL NO. | PART NO. | PART DESCRIPTION | SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|---|---|---|
| CK09 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE | CP22 | 0800353R | CAP.-ELECTRO.470UF-M 16V |
| CK10 | 0800326R | CAP.-ELECTRO. 100UF-M 16V | CP23 | AL00794S | CAP.-EL.S-LEAD 1500UF-M(LXV) 16V |
| CK11 | 0890074R | CAP.-CERAMIC 100PF-J 50V | CP24 | 0800353R | CAP.-ELECTRO.470UF-M 16V |
| CK12 | 0890076R | CAP.CERAMIC 150PF-K 50V | CP25 | 0800353R | CAP.-ELECTRO.470UF-M 16V |
| CK13 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE | CP26 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| CK14 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE | CP27 | 0800299R | CAP.-ELECTRO. 22UF-M(SMG) 16V |
| CK15 | AN00611R | CAP.POLYSTYLENE 0.001UF 50V TAPE | CP28 | 0880198R | CAP.-PLOY. 0.22UF-J 50V |
| CK16 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE | CP29 | 0880198R | CAP.-PLOY. 0.22UF-J 50V |
| CK17 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE | CP30 | 0800335R | CAP.-ELECTRO. 220UF-M(SMG) 16V |
| CK18 | AN00624R | CAP.POLYESTER 0.01UF 50V TAPE | CP31 | 0800335R | CAP.-ELECTRO. 220UF-M(SMG) 16V |
| CK19 | AN00624R | CAP.POLYESTER 0.01UF 50V TAPE | CP32 | 0800326R | CAP.-ELECTRO. 100UF-M 16V |
| CK20 | 0890076R | CAP.CERAMIC 150PF-K 50V | CP33 | AL00795S | CAP.EL.S-LEAD 2200UF-M(LXV) 16V |
| CK21 | 0890076R | CAP.CERAMIC 150PF-K 50V | CP34 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| CK22 | 0890087R | CAP.-CERAMIC 1000PF-K 50V | CP35 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| CK23 | 0890076R | CAP.CERAMIC 150PF-K 50V | CP36 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CK24 | 0890076R | CAP.CERAMIC 150PF-K 50V | ⚠ CP37 | AJ00157R | CAPACITOR CERAMIC 1000P 400V B |
| CK25 | 0890076R | CAP.CERAMIC 150PF-K 50V | ⚠ CP38 | AJ00157R | CAPACITOR CERAMIC 1000P 400V B |
| CK27 | 0800356N | CAP.-ELECTRO. 470UF-M 50V | CP39 | 0800328R | CAP. ELECTRO. 100UF-M 35V |
| CK28 | 0800356N | CAP.-ELECTRO. 470UF-M 50V | CP40 | 0800355N | CAP.ELECTRO. 470UF-M 35V |
| CK29 | 0890076R | CAP.CERAMIC 150PF-K 50V | CP41 | 0800355N | CAP.ELECTRO. 470UF-M 35V |
| CK30 | 0890076R | CAP.CERAMIC 150PF-K 50V | CP42 | AL00796S | CAP.EL.S-LEAD 1200UF-M(LXV) 35V |
| CK31 | 0890076R | CAP.CERAMIC 150PF-K 50V | CP43 | AL00796S | CAP.EL.S-LEAD 1200UF-M(LXV) 35V |
| CK32 | 0890076R | CAP.CERAMIC 150PF-K 50V | CP44 | 0244202R | CAP.-CERAMIC 470PF-K 2KV |
| CK33 | 0890076R | CAP.CERAMIC 150PF-K 50V | CP45 | 0243511R | CAP.-CERAMIC 680PF-K 500V TAPE |
| CK34 | 0890076R | CAP.CERAMIC 150PF-K 50V | CP46 | 0243511R | CAP.-CERAMIC 680PF-K 500V TAPE |
| CK36 | 0800355N | CAP.ELECTRO. 470UF-M 35V | CP47 | 0243511R | CAP.-CERAMIC 680PF-K 500V TAPE |
| CK37 | 0800355N | CAP.ELECTRO. 470UF-M 35V | CP48 | 0244202R | CAP.-CERAMIC 470PF-K 2KV |
| CK38 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE | CP49 | 0243511R | CAP.-CERAMIC 680PF-K 500V TAPE |
| CK39 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE | CP50 | 0243511R | CAP.-CERAMIC 680PF-K 500V TAPE |
| CK40 | 0800353R | CAP.-ELECTRO.470UF-M 16V | CX10 | 0284625R | CAP.-ELECTRO. 2.2UF-SME(BP)50V |
| CK41 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE | CX11 | 0284625R | CAP.-ELECTRO. 2.2UF-SME(BP)50V |
| CN01 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V | CX12 | 0284638R | CAP.-ELECTRO. 10UF-SME(BP) 16V |
| CN02 | 0800288R | CAP.-ELECTRO. 4.7UF-M(SMG) 50V | CX15 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CN03 | AN00631R | CAP.POLYESTER 0.033UF 50V TAPE | CX16 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| CN04 | 0890084R | CAP.-CERAMIC 560PF-K 50V | CX19 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| CN05 | 0800326R | CAP.-ELECTRO. 100UF-M 16V | CX20 | 0800299R | CAP.-ELECTRO. 22UF-M(SMG) 16V |
| CN06 | 0800294R | CAP.-ELECTRO. 10UF-M(SMG) 50V | CX21 | 0800294R | CAP.-ELECTRO. 10UF-M(SMG) 50V |
| CN09 | AN00615R | CAP.POLYESTER 0.0022UF 50V TAPE | CX24 | 0284634R | CAP.-ELECTRO 4.7UF-SME(BP) 50V |
| CP01 | 0284296 | CAP.ELECTRO 680UF-M 250V(KMH) | CX25 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| CP02 | 0284296 | CAP.ELECTRO 680UF-M 250V(KMH) | CX26 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CP05 | 0800329R | CAP.-ELECTRO. 100UF-M(SMG) 50V | CX27 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CP06 | 0299977F | CAP-PP FILM 0.0047UF-F 630V | CX28 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CP07 | 0800282R | CAP.-ELECTORO. 2.2UF-M(SMG) 50V | CX29 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CP08 | 0890085R | CAP.-CERAMIC 680PF-K 50V | CX30 | 0800277R | CAP.-ELECTORO. 0.47UF-M 50V |
| CP10 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE | CX31 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CP11 | 0284291 | CEL-221M251WMT(KMH) | CX32 | 0800282R | CAP.-ELECTORO. 2.2UF-M(SMG) 50V |
| CP12 | 0299610F | CAP.-POLYPRO.FILM 0.001UF 630V | CX33 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CP13 | AL00791S | CAP.-EL.S-LEAD 1500UF-M(LXV) 10V | CX34 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CP14 | AL00795S | CAP.EL.S-LEAD 2200UF-M(LXV) 16V | CX35 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CP15 | AL00795S | CAP.EL.S-LEAD 2200UF-M(LXV) 16V | CX36 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| CP16 | 0251704 | CAP.ELECTRO 470UF-M 160V(KMH) | CX37 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| CP17 | AL00796S | CAP.EL.S-LEAD 1200UF-M(LXV) 35V | CX38 | 0893044R | CAP2125CHIP 10000PFKB 50V TAPE |
| CP18 | AL00796S | CAP.EL.S-LEAD 1200UF-M(LXV) 35V | CX39 | 0893044R | CAP2125CHIP 10000PFKB 50V TAPE |
| CP19 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE | CX40 | 0893044R | CAP2125CHIP 10000PFKB 50V TAPE |
| CP20 | 0800352R | CAP.-ELECTRO.470UF 10V | CX41 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| CP21 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE | CX46 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |

# REPLACEMENT PARTS LIST

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| SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|
| CX47 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CX48 | 0893053R | CAP2125CHIP 47000PFKB 50V TAPE |
| CX49 | 0800324R | CAP.-ELECTRO. 100UF-M(SMG) 6.3V |
| CX50 | 0893044R | CAP2125CHIP 10000PFKB 50V TAPE |
| CX51 | 0893044R | CAP2125CHIP 10000PFKB 50V TAPE |
| CX52 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| CX53 | 0893053R | CAP2125CHIP 47000PFKB 50V TAPE |
| CX56 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CX57 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| CX63 | 0284623R | CAP.-ELECTRO. 1UF-SME(BP) 50V |
| CX65 | AN00637R | CAP.POLYESTER 0.1UF 50V TAPE |
| CX66 | 0800317R | CAP.-ELECTRO. 47UF-M(SMG) 16V |
| CX69 | 0800279R | CAP.-ELECTORO. 1.0UF-M(SMG) 50V |
| | | **DIODES** |
| D003 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D004 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D005 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D006 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D007 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D008 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D009 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D010 | 2348102M | ZENER MTZJ-5.1B TA |
| D012 | 2348212M | DIO-MTZ-J15BTA |
| D013 | 2348212M | DIO-MTZ-J15BTA |
| D014 | 2348212M | DIO-MTZ-J15BTA |
| D015 | 2348212M | DIO-MTZ-J15BTA |
| D016 | 2348212M | DIO-MTZ-J15BTA |
| D017 | 2348212M | DIO-MTZ-J15BTA |
| D018 | 2331827M | ZDE HZ-9 TAPE (C1) SI 500MW 9.3V |
| D019 | 2331827M | ZD HZ-9 TAPE (C1) SI 500MW 9.3V |
| D020 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D021 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D022 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D023 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D025 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D030 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D031 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D032 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D033 | 2348212M | DIO-MTZ-J15BTA |
| D034 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D035 | 2335991M | ZENER HZ-T33 (02 TP) |
| D036 | 2335991M | ZENER HZ-T33 (02 TP) |
| D037 | 2348212M | DIO-MTZ-J15BTA |
| D038 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D039 | 2348163M | ZENER MTZJ-9.1C TA |
| D040 | 2348163M | ZENER MTZJ-9.1C TA |
| D041 | 2348163M | ZENER MTZJ-9.1C TA |
| D305 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D307 | 2348163M | ZENER MTZJ-9.1C TA |
| D308 | 2348163M | ZENER MTZJ-9.1C TA |
| D309 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D310 | 2348031M | DIO-MTZ-J2.7ATA |
| D311 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D312 | 2348031M | DIO-MTZ-J2.7ATA |
| D313 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D314 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D315 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D602 | CH00151M | DIODE DSM1SD2(200V)TAPE |
| D603 | CH00151M | DIODE DSM1SD2(200V)TAPE |
| D604 | CH00151M | DIODE DSM1SD2(200V)TAPE |
| D605 | CH00151M | DIODE DSM1SD2(200V)TAPE |
| D606 | 2348212M | DIO-MTZ-J15BTA |
| D651 | 2348432M | DIODE RMPG06G |
| D653 | 2348193M | ZENER DIODE MTZJ-12C TA |
| D654 | 2333001M | DIODE RU2M (V) SI 1.0A 400V |
| D655 | 2348432M | DIODE RMPG06G |
| ⚠ D656 | 2344072 | DIODE ERC20M-08(800V) |
| ⚠ D657 | 2344072 | DIODE ERC20M-08(800V) |
| D661 | 2333001M | DIODE RU2M (V) SI 1.0A 400V |
| D662 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D663 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D702 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D705 | CH01042M | DIODE RK34 (40V) |
| D706 | CH01042M | DIODE RK34 (40V) |
| D751 | 2344041M | DIODE 1SS254TA/1SS270TA |
| ⚠ D752 | CH00551F | DIODE FMQ-G5FS LF715 1500V |
| D753 | 2344041M | DIODE 1SS254TA/1SS270TA |
| D754 | 2348273M | DIODE MTZ-J27CTA |
| D755 | 2348141M | ZENER DIODE MTZJ-7.5A TA |
| D756 | 2344041M | DIODE 1SS254TA/1SS270TA |
| ⚠ D757 | 2348292M | DIODE MTZ-J33BTA |
| ⚠ D759 | 2333001M | DIODE RU2M (V) SI 1.0A 400V |
| D760 | 2348432M | DIODE RMPG06G |
| D762 | 2348193M | ZENER DIODE MTZJ-12C TA |
| D771 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DF01 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DF02 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DF03 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DF04 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DF05 | 2338531M | DIODE EG-01C (V) SI 0.5A |
| DF07 | CH00901M | DIODE RGP02-15E 1500V 20A |
| DF08 | CH00901M | DIODE RGP02-15E 1500V 20A |
| DH01 | 2348103M | ZENER MTZJ-5.1C TA |
| DH02 | 2348103M | ZENER MTZJ-5.1C TA |
| DH03 | 2348103M | ZENER MTZJ-5.1C TA |
| DH04 | 2348062M | ZENER MTZJ-3.6B TA |
| DH05 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DH06 | 2348212M | DIO-MTZ-J15BTA |
| DH07 | 2348212M | DIO-MTZ-J15BTA |
| DH08 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DH09 | 2339551M | DIODE ED14(V1) SI 5MA 45V |
| DH10 | 2344041M | DIODE 1SS254TA/1SS270TA |
| ⚠ DH11 | 2337361F | DIODE RU4D LF-20 |
| DH12 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DH13 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DH15 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DH16 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DH17 | CH00151M | DIODE DSM1SD2(200V)TAPE |
| DH20 | CH00151M | DIODE DSM1SD2(200V)TAPE |
| DH21 | 2344041M | DIODE 1SS254TA/1SS270TA |

# REPLACEMENT PARTS LIST

**PRODUCT SERVICE NOTE:** Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

| SYMBOL NO. | PART NO. | PART DESCRIPTION | SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|---|---|---|
| DH22 | 2344041M | DIODE 1SS254TA/1SS270TA | DP01 | CH00172M | DIODE DFM1SD2(200V)TAPE |
| DH23 | 2344041M | DIODE 1SS254TA/1SS270TA | DP02 | 2334324M | ZD RD36E TAPE (B3) SI 500MW 36V |
| ⚠ DH24 | CH00031M | DIODE AU02V1(280V) | DP03 | CH00172M | DIODE DFM1SD2(200V)TAPE |
| DH25 | 2348174M | DIODE MTZ-J10DTA | DP04 | 2331844M | ZENER HZ12-B1 |
| DH26 | 2348193M | ZENER DIODE MTZJ-12C TA | DP05 | 2331844M | ZENER HZ12-B1 |
| DH27 | 2344041M | DIODE 1SS254TA/1SS270TA | DP06 | CH00183R | LIGHT EMITTING DIODE (SLZ-981C-06-T1) |
| DH28 | 2348092M | ZENER MTZ-J4.7BTA | DP07 | CH01061F | DIODE RU4AM(600V) |
| DH29 | 2344041M | DIODE 1SS254TA/1SS270TA | DP08 | 2336615 | DIODE RU3YX (LF-A1) |
| DH30 | 2344041M | DIODE 1SS254TA/1SS270TA | DP09 | 2336615 | DIODE RU3YX (LF-A1) |
| DH31 | 2335042M | ZENER HZ-22 (2L TP) SI 200MA 400MW | DP10 | 2336615 | DIODE RU3YX (LF-A1) |
| ⚠ DH32 | 2344041M | DIODE 1SS254TA/1SS270TA | DP11 | CH01061F | DIODE RU4AM(600V) |
| DH33 | 2334305M | ZENER RD30E (B4 T2/TP/TA) SI 5MA 30.51V | DP12 | 2337952S | DIODE RU4YX(LF015-302) |
| ⚠ DH34 | 2344041M | DIODE 1SS254TA/1SS270TA | DP13 | 2337952S | DIODE RU4YX(LF015-302) |
| ⚠ DH35 | 2344041M | DIODE 1SS254TA/1SS270TA | DP14 | CH01042M | DIODE RK34 (40V) |
| DH40 | 2344041M | DIODE 1SS254TA/1SS270TA | DP15 | CH00182R | LIGHT EMITTING DIODE (SLZ-381C-06-T1) |
| DH41 | 2334243M | ZENER RD16E (B2 T2/TP/TA)SI 10MA 16.51V | DP16 | CH00182R | LIGHT EMITTING DIODE (SLZ-381C-06-T1) |
| DH42 | 2334324M | ZD RD36E TAPE (B3) SI 500MW 36V | DP17 | 2348283M | ZENER DIODE MTZJ-30C TA |
| DK01 | 2339551M | DIODE ED14(V1) SI 5MA 45V | DP18 | 2348143M | DIODE MTZ-J7.5CTA |
| DK04 | 2348431M | DIODE RMPG06D | DP19 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DK05 | 2348431M | DIODE RMPG06D | DP20 | CH00182R | LIGHT EMITTING DIODE (SLZ-381C-06-T1) |
| DK16 | 2334324M | ZD RD36E TAPE (B3) SI 500MW 36V | DP21 | CH00182R | LIGHT EMITTING DIODE (SLZ-381C-06-T1) |
| DK17 | 2334324M | ZD RD36E TAPE (B3) SI 500MW 36V | DP22 | CH00182R | LIGHT EMITTING DIODE (SLZ-381C-06-T1) |
| DK18 | 2334324M | ZD RD36E TAPE (B3) SI 500MW 36V | DP23 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DK19 | 2334324M | ZD RD36E TAPE (B3) SI 500MW 36V | DP25 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DK20 | 2334324M | ZD RD36E TAPE (B3) SI 500MW 36V | DP26 | 2348042M | ZENER MTZ-J3.0BTA |
| DK21 | 2334324M | ZD RD36E TAPE (B3) SI 500MW 36V | DP27 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DK22 | 2334324M | ZD RD36E TAPE (B3) SI 500MW 36V | DP28 | 2348121M | ZENER MTZJ-6.2A TA |
| DK23 | 2334324M | ZD RD36E TAPE (B3) SI 500MW 36V | DP29 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DK24 | 2334324M | ZD RD36E TAPE (B3) SI 500MW 36V | DP30 | 2348432M | DIODE RMPG06G |
| DK25 | 2334324M | ZD RD36E TAPE (B3) SI 500MW 36V | DP31 | 2348432M | DIODE RMPG06G |
| DK26 | 2334324M | ZD RD36E TAPE (B3) SI 500MW 36V | DP32 | 2348121M | ZENER MTZJ-6.2A TA |
| DK27 | 2334324M | ZD RD36E TAPE (B3) SI 500MW 36V | DP33 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DK30 | 2348141M | ZENER DIODE MTZJ-7.5A TA | DP34 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DK31 | 2348141M | ZENER DIODE MTZJ-7.5A TA | DP36 | CH00901M | DIODE RGP02-15E 1500V 20A |
| DK32 | 2348141M | ZENER DIODE MTZJ-7.5A TA | DP37 | CH00901M | DIODE RGP02-15E 1500V 20A |
| DK33 | 2348141M | ZENER DIODE MTZJ-7.5A TA | DP38 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DK34 | 2348141M | ZENER DIODE MTZJ-7.5A TA | DP39 | 2348193M | ZENER DIODE MTZJ-12C TA |
| DK35 | 2348141M | ZENER DIODE MTZJ-7.5A TA | DP41 | 2348431M | DIODE RMPG06D |
| DK36 | 2348141M | ZENER DIODE MTZJ-7.5A TA | DX01 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DK37 | 2348141M | ZENER DIODE MTZJ-7.5A TA | DX02 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DK40 | 2331806M | ZENER DIODE HZ-6 TAPE (B3) SI 500MW | DX05 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DK41 | 2331806M | ZENER DIODE HZ-6 TAPE (B3) SI 500MW | DX06 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DK42 | 2331806M | ZENER DIODE HZ-6 TAPE (B3) SI 500MW | DX07 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DK43 | 2331806M | ZENER DIODE HZ-6 TAPE (B3) SI 500MW | DX08 | 2348163M | ZENER MTZJ-9.1C TA |
| DK44 | 2331806M | ZENER DIODE HZ-6 TAPE (B3) SI 500MW | DX09 | 2348163M | ZENER MTZJ-9.1C TA |
| DN01 | 2344041M | DIODE 1SS254TA/1SS270TA | DX10 | 2348163M | ZENER MTZJ-9.1C TA |
| DN02 | 2344041M | DIODE 1SS254TA/1SS270TA | DX11 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DN03 | 2344041M | DIODE 1SS254TA/1SS270TA | DX12 | 2344041M | DIODE 1SS254TA/1SS270TA |
| DN04 | 2344041M | DIODE 1SS254TA/1SS270TA | | | |
| DN05 | 2348071M | ZENER DIODE MTZJ-3.9A TA | | | **FUSES** |
| DN06 | 2344041M | DIODE 1SS254TA/1SS270TA | | | |
| DN07 | 2344041M | DIODE 1SS254TA/1SS270TA | ⚠ EP91 | AZ00109M | PROTECTOR CRXT491007 |
| DN08 | CH00151M | DIODE DSM1SD2(200V)TAPE | ⚠ EP92 | AZ00107M | PROTECTOR CRXT491004 |
| DN09 | 2331849M | ZENER HZ12C3 (TA) SI 500MW | ⚠ EP93 | AZ00108M | PROTECTOR(CRXT491005) |
| DN10 | 2344041M | DIODE 1SS254TA/1SS270TA | ⚠ EP94 | AZ00109M | PROTECTOR CRXT491007 |
| DN11 | 2344041M | DIODE 1SS254TA/1SS270TA | ⚠ EP95 | AZ00109M | PROTECTOR CRXT491007 |

# REPLACEMENT PARTS LIST

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| SYMBOL NO. | PART NO. | PART DESCRIPTION | SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|---|---|---|
| ⚠ EP96 | AZ00109M | PROTECTOR CRXT491007 | L012 | BH00697R | COIL 100UH |
| ⚠ EP97 | AZ00109M | PROTECTOR CRXT491007 | L013 | BH00697R | COIL 100UH |
| ⚠ EP98 | AZ00104M | PROTECTOR(CRXT491002) | L014 | BH00697R | COIL 100UH |
| ⚠ EP99 | AZ00101M | PROTECTOR(CRXT491.500) | L015 | BH00697R | COIL 100UH |
| | | | L016 | BH00697R | COIL 100UH |
| | | | L017 | BH00694R | COIL 56UH |
| | | **INTEGRATED CIRCUITS** | L018 | BH00697R | COIL 100UH |
| | | | L020 | BH00697R | COIL 100UH |
| I001 | CP06343U | IC-MN102L35GHA2 MAIN MICRO | L021 | BH00214R | FILTER COIL 100UH |
| I002 | CP05272U | E2PROM M24C16-BN6 | L022 | BH00697R | COIL 100UH |
| I003 | CP05261U | DIGITAL MONOLITHIC IC (M62392P) | L023 | BH00697R | COIL 100UH |
| I004 | 2015712R | IC HD74HC4053FPEL | L024 | BH00697R | COIL 100UH |
| I005 | 2000541 | IC M51951BSL | L025 | BH00697R | COIL 100UH |
| I008 | CP05571 | IC BA17805 | L026 | BH00697R | COIL 100UH |
| I010 | CP05571 | IC BA17805 | L028 | BH00697R | COIL 100UH |
| I012 | CP04232 | ANALOG MONOLITHIC IC BA033T | L029 | BH00697R | COIL 100UH |
| I013 | CK08521R | ANALOG MONOLITHIC IC (BA7657F-E2) | L030 | BH00697R | COIL 100UH |
| I014 | CK07131R | ANALOG MONO. IC (MC14053BFEL) | L031 | 2123107M | LAL02 AXIAL COIL 22UH-K |
| I016 | 2020342 | IC MM1115XS | L032 | BH00697R | COIL 100UH |
| I301 | CP00742U | TA8851BN | L301 | BH00697R | COIL 100UH |
| I302 | CP05572 | ANALOG MONOLITHIC IC (BA17809) | L302 | BH00697R | COIL 100UH |
| I304 | CW00022 | COMB FILTER (337KNT) | L303 | BH00697R | COIL 100UH |
| I305 | 2020342 | IC MM1115XS | L304 | BH00697R | COIL 100UH |
| I601 | CZ00761U | LA7846N | L305 | BH00697R | COIL 100UH |
| I651 | 2365452 | IC NJM2903D | L306 | BH00697R | COIL 100UH |
| I701 | CP05571 | IC BA17805 | L651 | BZ00841 | CHOKE COIL 150UH SL1720 |
| I702 | CZ00751U | UPC1885 | L652 | BH00561 | COIL HC-331K-1 |
| I703 | CP00401 | DIGITAL MONOLITHIC IC (UPC4558C) | L661 | 2123462M | FERRITE BEADS CORE B 2.3UH |
| IH01 | 2362161 | IC HD74LS221P | L662 | 2123462M | FERRITE BEADS CORE B 2.3UH |
| IH02 | 2366721 | IC UPC1394C | L751 | BH00212R | FILTER COIL 68UH |
| IK01 | CP05571 | IC BA17805 | L752 | BZ02582 | H. LINEARITY COIL 3UH |
| IK02 | CP01631R | ICL-PST9142 | L753 | BZ02583 | LINEARITY COIL 6UH |
| IK03 | CP05571 | IC BA17805 | L755 | 2123462M | FERRITE BEADS CORE B 2.3UH |
| IK04 | CZ00431 | CONV. OUTPUT (STK392-110) | L757 | 2123462M | FERRITE BEADS CORE B 2.3UH |
| IK05 | CZ00431 | CONV. OUTPUT (STK392-110) | L758 | BH00228R | COIL 332K-1T7608A |
| ⚠ IP01 | CZ00451 | REGULATOR IC (STR-M6811A) | L763 | 2123461M | FERRITE BEADS B 0.8 MH |
| IP02 | CP05141 | ANALOG MONOLITHIC IC (PQ6RD083) | L765 | 2123461M | FERRITE BEADS B 0.8 MH |
| IP03 | CP03924F | IC SI-8120S | L771 | 2123461M | FERRITE BEADS B 0.8 MH |
| ⚠ IP04 | 2381344 | IC SE130N | L772 | 2123461M | FERRITE BEADS B 0.8 MH |
| ⚠ IP05 | 2000465 | IC PS2501-1 (KC/LC) | L773 | 2123461M | FERRITE BEADS B 0.8 MH |
| ⚠ IP06 | 2000465 | IC PS2501-1 (KC/LC) | LF01 | BH00229R | COIL 472K-1T7608A |
| IX01 | CP04712U | ANALOG MONOLITHIC IC (TA1276AN) | LH01 | BH00214R | FILTER COIL 100UH |
| | | | ⚠ LH02 | BH00214R | FILTER COIL 100UH |
| | | | LH03 | BH00217R | FILTER COIL 180UH |
| | | **COILS** | LK01 | 2123468M | FERRITE BEADS CORE LEAD 0.8MH |
| | | | LK02 | 2123468M | FERRITE BEADS CORE LEAD 0.8MH |
| L001 | BJ00402 | 30MHZ BAND PASS LC FILTER 87F2 | LK03 | 2123468M | FERRITE BEADS CORE LEAD 0.8MH |
| L002 | BH00214R | FILTER COIL 100UH | LK04 | 2123468M | FERRITE BEADS CORE LEAD 0.8MH |
| L003 | BH00697R | COIL 100UH | LK05 | 2123468M | FERRITE BEADS CORE LEAD 0.8MH |
| L004 | BH00697R | COIL 100UH | LK06 | 2123468M | FERRITE BEADS CORE LEAD 0.8MH |
| L005 | BH00214R | FILTER COIL 100UH | LK07 | 2123468M | FERRITE BEADS CORE LEAD 0.8MH |
| L007 | BH00214R | FILTER COIL 100UH | LK08 | 2123468M | FERRITE BEADS CORE LEAD 0.8MH |
| L008 | BH00214R | FILTER COIL 100UH | LK09 | 2123462M | FERRITE BEADS CORE B 2.3UH |
| L009 | BH00214R | FILTER COIL 100UH | LK10 | 2123462M | FERRITE BEADS CORE B 2.3UH |
| L010 | BH00214R | FILTER COIL 100UH | LK11 | 2123462M | FERRITE BEADS CORE B 2.3UH |

# REPLACEMENT PARTS LIST

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| SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|
| LK12 | BH00697R | COIL 100UH |
| LK13 | 2123468M | FERRITE BEADS CORE LEAD 0.8MH |
| LK14 | 2123468M | FERRITE BEADS CORE LEAD 0.8MH |
| LK15 | 2123468M | FERRITE BEADS CORE LEAD 0.8MH |
| LK16 | 2123468M | FERRITE BEADS CORE LEAD 0.8MH |
| LK17 | 2123468M | FERRITE BEADS CORE LEAD 0.8MH |
| LK18 | 2123468M | FERRITE BEADS CORE LEAD 0.8MH |
| LK19 | 2123468M | FERRITE BEADS CORE LEAD 0.8MH |
| LK20 | 2123468M | FERRITE BEADS CORE LEAD 0.8MH |
| LP01 | 2123462M | FERRITE BEADS CORE B 2.3UH |
| LP02 | 2123462M | FERRITE BEADS CORE B 2.3UH |
| LP03 | BH00214R | FILTER COIL 100UH |
| LP04 | BH00214R | FILTER COIL 100UH |
| LP05 | BH00209R | FILTER COIL 47UH |
| LP06 | BH00209R | FILTER COIL 47UH |
| LP07 | BV00901 | PL-CHOPPER COIL 200UH/2A |
| LP08 | BH00212R | FILTER COIL 68UH |
| LP09 | BH00212R | FILTER COIL 68UH |
| LP10 | BH00212R | FILTER COIL 68UH |
| LP11 | BH00206R | FILTER COIL 27UH |
| LP12 | BH00209R | FILTER COIL 47UH |
| LP13 | BH00206R | FILTER COIL 27UH |
| LP14 | BH00209R | FILTER COIL 47UH |
| LP17 | BH00214R | FILTER COIL 100UH |
| LP18 | BH00217R | FILTER COIL 180UH |
| LP20 | 2123461M | FERRITE BEADS B 0.8 MH |
| LP22 | 2124362 | DC.NOISE FILTER |
| LP23 | 2124362 | DC.NOISE FILTER |
| LX03 | BH00697R | COIL 100UH |
| LX04 | BH00697R | COIL 100UH |
| LX05 | BH00697R | COIL 100UH |
| LX06 | BH00697R | COIL 100UH |
| LX07 | BH00697R | COIL 100UH |
| LX08 | BH00697R | COIL 100UH |
| LX09 | BH00697R | COIL 100UH |
| LX10 | BH00697R | COIL 100UH |
| LX17 | BH00697R | COIL 100UH |

**TRANSISTORS**

| SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|
| Q002 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q003 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q004 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q005 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q006 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q007 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q008 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q009 | 2312171 | TRS. 2SC3852 |
| Q010 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q011 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q012 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q013 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q014 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q015 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q018 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q019 | 2325781R | 2SA1037KT146Q/R |

| SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|
| Q020 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q021 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q022 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q023 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q024 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q025 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q026 | 2325781R | 2SA1037KT146Q/R |
| Q031 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q032 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q033 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q034 | 2325781R | 2SA1037KT146Q/R |
| Q035 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q036 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q037 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q038 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q039 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q040 | 2325781R | 2SA1037KT146Q/R |
| Q041 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q042 | 2325781R | 2SA1037KT146Q/R |
| Q043 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q044 | 2325781R | 2SA1037KT146Q/R |
| Q045 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q046 | 2325781R | 2SA1037KT146Q/R |
| Q047 | 2320647M | TRS. 2SC1213 (C 21 TZ/D 21 TZ) SI 80MHZ400MW |
| Q048 | 2325781R | 2SA1037KT146Q/R |
| Q049 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q050 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q051 | 2325781R | 2SA1037KT146Q/R |
| Q052 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q053 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q054 | 2325781R | 2SA1037KT146Q/R |
| Q055 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q056 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q057 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q058 | 2325781R | 2SA1037KT146Q/R |
| Q059 | 2325781R | 2SA1037KT146Q/R |
| Q061 | 2325781R | 2SA1037KT146Q/R |
| Q062 | 2325781R | 2SA1037KT146Q/R |
| Q063 | 2325781R | 2SA1037KT146Q/R |
| Q067 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q068 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q069 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q070 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q071 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q301 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q302 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q303 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q305 | 2320647M | TRS. 2SC1213 (C 21 TZ/D 21 TZ) SI 80MHZ400MW |
| Q306 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q307 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q312 | 2320647M | TRS. 2SC1213 (C 21 TZ/D 21 TZ) SI 80MHZ400MW |
| Q313 | 2320647M | TRS. 2SC1213 (C 21 TZ/D 21 TZ) SI 80MHZ400MW |
| Q321 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q324 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q329 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q330 | 2320647M | TRS. 2SC1213 (C 21 TZ/D 21 TZ) SI 80MHZ400MW |
| Q331 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |

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| SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|
| Q332 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q333 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| Q334 | 2325781R | 2SA1037KT146Q/R |
| Q335 | 2320647M | TRS. 2SC1213 (C 21 TZ/D 21 TZ) SI 80MHZ400MW |
| Q336 | 2320647M | TRS. 2SC1213 (C 21 TZ/D 21 TZ) SI 80MHZ400MW |
| Q601 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| Q602 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| Q610 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| Q652 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| Q653 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| Q654 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| Q655 | 2320663M | TRS. 2SC1213A (C) |
| Q656 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| Q657 | CF00931U | TRS. 2SK2382 200V |
| Q701 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| Q751 | 2326216 | TRS. 2SC3116 (S/T) |
| Q754 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| Q755 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| ⚠ Q777 | CF01891F | TRS. 2SC5413 DEFLECTION OUTPUT |
| QF01 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| QF02 | 2320663M | TRS. 2SC1213A (C) |
| QF03 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| QF04 | 2320663M | TRS. 2SC1213A (C) |
| QF05 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| QF06 | CF00821F | TRS. 2SC4686A 1200V |
| QF07 | CF00821F | TRS. 2SC4686A 1200V |
| QF08 | 2326873R | TRS. DTC144ES TP |
| QF09 | CF00821F | TRS. 2SC4686A 1200V |
| ⚠ QH01 | 2390851 | TRS. ST-1MB12-140 H.V. OUTPUT (ABC) |
| QH02 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| QH03 | 2321112M | TRS.2SA778AK(02 TAPE) |
| ⚠ QH04 | 2321321M | TRS. 2SA844 (D TZ/E TZ) SI 200MHZ300MW |
| ⚠ QH05 | 2321321M | TRS. 2SA844 (D TZ/E TZ) SI 200MHZ300MW |
| QH06 | 2321321M | TRS. 2SA844 (D TZ/E TZ) SI 200MHZ300MW |
| QH07 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| QH08 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| QH09 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| QH10 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| QH11 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| QH12 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| QH13 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| QK01 | 2312171 | TRS. 2SC3852 |
| QK02 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| QK03 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| QK06 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| QK07 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| QK08 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| QN01 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| QN02 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| QN03 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| QN04 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| QN05 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| QN06 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| QN07 | 2320591M | TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW |
| QP01 | 2312171 | TRS. 2SC3852 |
| QP02 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| QP03 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| QP04 | 2321112M | TRS.2SA778AK(02 TAPE) |
| ⚠ QP05 | 2323782R | THYRISTOR 03P2M(TA) |
| QP06 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| QP08 | 2327461 | TRS.2SA1488 (Y/G) |
| QX08 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| QX09 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| QX10 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| QX14 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| QX15 | 2325781R | 2SA1037KT146Q/R |
| QX16 | 2325781R | 2SA1037KT146Q/R |
| QX17 | 2325781R | 2SA1037KT146Q/R |
| QX23 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| QX28 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| QX33 | 2320637M | TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW |
| QX36 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| QX37 | 2325781R | 2SA1037KT146Q/R |
| QX38 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| QX41 | 2320647M | TRS. 2SC1213 (C 21 TZ/D 21 TZ) SI 80MHZ400MW |
| QX45 | 2325691R | TRANSISTOR CHIP(2SC2412KQ/R) |
| QX46 | 2325781R | 2SA1037KT146Q/R |
|  |  | **RESISTORS** |
| R001 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R002 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R003 | 0700032M | RES.-CARBON FLM 1/16W 220-JB |
| R004 | 0195918R | RES 2125 CHIP 1/16W 5.6KJ TAPE |
| R005 | 0195918R | RES 2125 CHIP 1/16W 5.6KJ TAPE |
| R006 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R007 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R008 | 0195916R | RESISTOR 2125 CHIP 1/16W 4.7KJ TAPE |
| R010 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R011 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R012 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R013 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R014 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R015 | 0700027M | RES.-CARBON FLM 1/16W 100-JB |
| R016 | 0700027M | RES.-CARBON FLM 1/16W 100-JB |
| R017 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE |
| R018 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R019 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE |
| R020 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R021 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE |
| R022 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R023 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE |
| R024 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R025 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE |
| R026 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R027 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE |
| R029 | 0700027M | RES.-CARBON FLM 1/16W 100-JB |
| R030 | 0700027M | RES.-CARBON FLM 1/16W 100-JB |
| R031 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R032 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R033 | 0700027M | RES.-CARBON FLM 1/16W 100-JB |
| R034 | 0700027M | RES.-CARBON FLM 1/16W 100-JB |

# REPLACEMENT PARTS LIST

**PRODUCT SERVICE NOTE:** Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

| SYMBOL NO. | PART NO. | PART DESCRIPTION | SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|---|---|---|
| R035 | 0700027M | RES.-CARBON FLM 1/16W 100-JB | R092 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R036 | 0700027M | RES.-CARBON FLM 1/16W 100-JB | R093 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R037 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R094 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R038 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R096 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R039 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE | R097 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R040 | 0700027M | RES.-CARBON FLM 1/16W 100-JB | R098 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R041 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R099 | 0195918R | RES 2125 CHIP 1/16W 5.6KJ TAPE |
| R042 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE | R0A0 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R043 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE | R0A1 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R044 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0A2 | 0114149M | RESISTOR-CARBON FILM SRD 1/4 PF 560-J |
| R046 | 0195975R | RMC73S-2A105JR | R0A3 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE |
| R047 | 0195918R | RES 2125 CHIP 1/16W 5.6KJ TAPE | R0A4 | 0195916R | RESISTOR 2125 CHIP 1/16W 4.7KJ TAPE |
| R048 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0A5 | 0195927R | RES 2125 CHIP 1/16W 12KJ TAPE |
| R049 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE | R0A6 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE |
| R050 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0A7 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE |
| R051 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0A8 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R052 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0A9 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R053 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0C1 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R054 | 0195902R | RES 2125 CHIP 1/16W 1.2KJ TAPE | R0C2 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R055 | 0195885R | RESISTOR 2125 CHIP 1/16W 270J TAPE | R0C6 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R056 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE | R0C7 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R057 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | R0C8 | 0195895R | RES.2125 CHIP 1/10W 680J TAPE |
| R058 | 0195879R | RES 2125 CHIP 1/16W 150J TAPE | R0C9 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R059 | 0195904R | RESISTOR 2125 CHIP 1/16W 1.5KJ TAPE | R0E1 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R060 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE | R0E2 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R061 | 0195966R | RES 2125 CHIP 1/16W 470KJ TAPE | R0E3 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R062 | 0195918R | RES 2125 CHIP 1/16W 5.6KJ TAPE | R0E4 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R063 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE | R0E5 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R064 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE | R0E6 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R065 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE | R0E7 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R066 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE | R0E8 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R067 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE | R0E9 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R068 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE | R0F1 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R069 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0F2 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R070 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0F3 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R071 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0F4 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R072 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0F5 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R073 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0F6 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R074 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE | R0F7 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R075 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE | R0F8 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R076 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE | R0F9 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R077 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE | R0G1 | 0195895R | RES.2125 CHIP 1/10W 680J TAPE |
| R078 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE | R0G2 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R079 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB | R0G3 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R080 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB | R0G4 | 0195918R | RES 2125 CHIP 1/16W 5.6KJ TAPE |
| R081 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE | R0G5 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R082 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE | R0G6 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R083 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB | R0G7 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R084 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | R0G8 | 0100059M | RES.-CARBON FLM 1/8W 560-JB |
| R085 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB | R0G9 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R086 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE | R0H1 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB |
| R088 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE | R0H2 | 0700058M | RES.-CARBON FLM 1/16W 22K-JB |
| R089 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE | R0H3 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R090 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | R0H5 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R091 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE | | | |

# REPLACEMENT PARTS LIST

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| SYMBOL NO. | PART NO. | PART DESCRIPTION | SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|---|---|---|
| R0H6 | 0195897R | RES 2125 CHIP 1/16W 820J TAPE | R0U2 | 0700027M | RES.-CARBON FLM 1/16W 100-JB |
| R0H7 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE | R0U3 | 0195908R | RES.2125 CHIP 1/10W 2.2KJ TAPE |
| R0H8 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE | R0U4 | 0119605M | RES.-MTL FLM 1/8W 820-FB |
| R0H9 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0U5 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R0J1 | 0195891R | RES 2125 CHIP 1/16W 470J TAPE | R0U6 | 0700045M | RES.-CARBON FLM 1/16W 2.2K-JB |
| R0J2 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0U7 | 0195927R | RES 2125 CHIP 1/16W 12KJ TAPE |
| R0J3 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE | R0U8 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE |
| R0J4 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE | R0U9 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R0J5 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0V1 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB |
| R0J6 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE | R0V2 | 0119617M | RES.-MTL FLM 1/8W 2.7K-FB |
| R0J7 | 0195891R | RES 2125 CHIP 1/16W 470J TAPE | R0V3 | 0195927R | RES 2125 CHIP 1/16W 12KJ TAPE |
| R0J8 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0V4 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE |
| R0J9 | 0195891R | RES 2125 CHIP 1/16W 470J TAPE | R0V5 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R0K1 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE | R0V6 | 0195910R | RES.2125 CHIP 1/16W 2.7KJ TAPE |
| R0K2 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE | R0V7 | 0119615M | RES.-MTL FLM 1/8W 2.2K-FB |
| R0K3 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE | R0V8 | 0119621M | RES.-MTL FLM 1/8W 3.9K-FB |
| R0K4 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0V9 | 0195910R | RES.2125 CHIP 1/16W 2.7KJ TAPE |
| R0K5 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE | R0W1 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R0K6 | 0195891R | RES 2125 CHIP 1/16W 470J TAPE | R0W2 | 0119611M | RES.-MTL FLM 1/8W 1.5K-FB |
| R0K7 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0W3 | 0195895R | RES.2125 CHIP 1/10W 680J TAPE |
| R0K8 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE | R0W4 | 0195895R | RES.2125 CHIP 1/10W 680J TAPE |
| R0K9 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE | R0W5 | 0195895R | RES.2125 CHIP 1/10W 680J TAPE |
| R0L1 | 0195871R | RMC73S-2A750JR | R0W6 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R0L2 | 0195866R | RES 2125 CHIP 1/16W 47J TAPE | R0W7 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R0L3 | 0195866R | RES 2125 CHIP 1/16W 47J TAPE | R0W8 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R0L4 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE | R0W9 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R0L5 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE | R0X1 | 0119607M | RES.-MTL FLM 1/8W 1.0K-FB |
| R0L6 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE | R0X3 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R0L7 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE | R0X4 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R0L8 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE | R0X5 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R0L9 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE | R0X6 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R0M1 | 0195908R | RES.2125 CHIP 1/10W 2.2KJ TAPE | R0X7 | 0195916R | RESISTOR 2125 CHIP 1/16W 4.7KJ TAPE |
| R0M2 | 0195912R | RES 2125 CHIP 1/16W 3.3KJ TAPE | R0X8 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R0M3 | 0195920R | RES 2125 CHIP 1/16W 6.8KJ TAPE | R0X9 | 0195916R | RESISTOR 2125 CHIP 1/16W 4.7KJ TAPE |
| R0M4 | 0700027M | RES.-CARBON FLM 1/16W 100-JB | R0Y0 | 0195887R | RES 2125 CHIP 1/16W 330J TAPE |
| R0M5 | 0700027M | RES.-CARBON FLM 1/16W 100-JB | R0Y1 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R0M6 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0Y2 | 0195897R | RES 2125 CHIP 1/16W 820J TAPE |
| R0M7 | 0700051M | RES.-CARBON FLM 1/16W 5.6K-JB | R0Y3 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R0M8 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE | R0Y4 | 0700034M | RES.-CARBON FLM 1/16W 330-JB |
| R0M9 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE | R0Y5 | 0195883R | RES 2125 CHIP 1/16W 220J TAPE |
| R0N1 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE | R0Y6 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R0N2 | 0195943R | RES.2125 CHIP 1/16W 56KJ TAPE | R0Y7 | 0700034M | RES.-CARBON FLM 1/16W 330-JB |
| R0N3 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE | R0Y8 | 0195883R | RES 2125 CHIP 1/16W 220J TAPE |
| R0N6 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE | R0Y9 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R0R3 | 0100059M | RES.-CARBON FLM 1/8W 560-JB | R0Z0 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R0R4 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | R0Z1 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R0R6 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | R0Z2 | 0195897R | RES 2125 CHIP 1/16W 820J TAPE |
| R0R7 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0Z3 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R0T5 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0Z4 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE |
| R0T6 | 0700027M | RES.-CARBON FLM 1/16W 100-JB | R0Z5 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE |
| R0T7 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R0Z6 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE |
| R0T8 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE | R0Z8 | 0700019M | RES.-CARBON FLM 1/16W 27-J |
| R0T9 | 0195908R | RES.2125 CHIP 1/10W 2.2KJ TAPE | R0Z9 | 0700019M | RES.-CARBON FLM 1/16W 27-J |
| R0U1 | 0700027M | RES.-CARBON FLM 1/16W 100-JB | R100 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |

# REPLACEMENT PARTS LIST

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| SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|
| R101 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE |
| R102 | 0195918R | RES 2125 CHIP 1/16W 5.6KJ TAPE |
| R103 | 0195927R | RES 2125 CHIP 1/16W 12KJ TAPE |
| R104 | 0195950R | RES 2125 CHIP 1/16W 100KJ TAPE |
| R111 | 0195943R | RES.2125 CHIP 1/16W 56KJ TAPE |
| R112 | 0195947R | RES.2125 CHIP 1/10W 82KJ TAPE |
| R113 | 0195881R | RES 2125 CHIP 1/16W 180J TAPE |
| R114 | 0195950R | RES 2125 CHIP 1/16W 100KJ TAPE |
| R115 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE |
| R116 | 0195916R | RESISTOR 2125 CHIP 1/16W 4.7KJ TAPE |
| R117 | 0195916R | RESISTOR 2125 CHIP 1/16W 4.7KJ TAPE |
| R126 | 0195927R | RES 2125 CHIP 1/16W 12KJ TAPE |
| R127 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE |
| R128 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R129 | 0195943R | RES.2125 CHIP 1/16W 56KJ TAPE |
| R130 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R131 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R132 | 0195883R | RES 2125 CHIP 1/16W 220J TAPE |
| R133 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R136 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R141 | 0700027M | RES.-CARBON FLM 1/16W 100-JB |
| R142 | 0700037M | RES.-CARBON FLM 1/16W 560-JB |
| R143 | 0700027M | RES.-CARBON FLM 1/16W 100-JB |
| R144 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE |
| R145 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R146 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE |
| R147 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R148 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R149 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R150 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R151 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R152 | 0700027M | RES.-CARBON FLM 1/16W 100-JB |
| R153 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R155 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R156 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R157 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R158 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R159 | 0700027M | RES.-CARBON FLM 1/16W 100-JB |
| R160 | 0700027M | RES.-CARBON FLM 1/16W 100-JB |
| R161 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R162 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R163 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R164 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R165 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R166 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R169 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R171 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R172 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R173 | 0195918R | RES 2125 CHIP 1/16W 5.6KJ TAPE |
| R174 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE |
| R175 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R176 | 0195950R | RES 2125 CHIP 1/16W 100KJ TAPE |
| R179 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R183 | 0700049M | RES.-CARBON FLM 1/16W 4.7K-JB |
| R195 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE |
| R197 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R199 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE |
| R1A1 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1A2 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1C8 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1C9 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1E1 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1E2 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1E3 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1E4 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1E5 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1E6 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1E7 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1E8 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1E9 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1F1 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1F2 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1F3 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1F4 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1F5 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1F6 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1F7 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1F9 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1G2 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1G3 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1G4 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1G5 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1G6 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1G7 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1G8 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1G9 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1H3 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1H4 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1H5 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1H6 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1H7 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1H8 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1J1 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1J2 | 0195248R | RES 3216 CHIP 1/8 W 000 TAPE |
| R1J6 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1L0 | 0195881R | RES 2125 CHIP 1/16W 180J TAPE |
| R1L1 | 0195881R | RES 2125 CHIP 1/16W 180J TAPE |
| R1L2 | 0195881R | RES 2125 CHIP 1/16W 180J TAPE |
| R1L3 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R1L5 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R1M1 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R1M2 | 0195906R | RES MINI-CHIP RMC1/16 1.8K-J TAPE |

# REPLACEMENT PARTS LIST

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| SYMBOL NO. | PART NO. | PART DESCRIPTION | SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|---|---|---|
| R1M4 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R343 | 0195870R | RESISTOR MINI-CHIP RMC1/10 68-J TAPE |
| R1M5 | 0195906R | RESISTOR MINI-CHIP RMC1/16 1.8K-J TAPE | R344 | 0195950R | RES 2125 CHIP 1/16W 100KJ TAPE |
| R1M6 | 0700038M | RES.-CARBON FLM 1/16W 680-JB | R350 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1P1 | 0700027M | RES.-CARBON FLM 1/16W 100-JB | R351 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R1P2 | 0195912R | RES 2125 CHIP 1/16W 3.3KJ TAPE | R352 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R1P3 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE | R353 | 0195908R | RES.2125 CHIP 1/10W 2.2KJ TAPE |
| R1P4 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE | R355 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R1P5 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R356 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R1P6 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R357 | 0195950R | RES 2125 CHIP 1/16W 100KJ TAPE |
| R1X1 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE | R358 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R1X2 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R359 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R1X3 | 0195950R | RES 2125 CHIP 1/16W 100KJ TAPE | R360 | 0195960R | RESISTOR MINI-CHIP RMC1/16 270K-J TAPE |
| R1X4 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R361 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R1X5 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R382 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R1X6 | 0195950R | RES 2125 CHIP 1/16W 100KJ TAPE | R383 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE |
| R1X7 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | R384 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE |
| R1X8 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE | R386 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R207 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R387 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE |
| R212 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE | R388 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE |
| R217 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE | R389 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE |
| R301 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R390 | 0195871R | RMC73S-2A750JR |
| R302 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R391 | 0195871R | RMC73S-2A750JR |
| R303 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R392 | 0195950R | RES 2125 CHIP 1/16W 100KJ TAPE |
| R304 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R393 | 0195950R | RES 2125 CHIP 1/16W 100KJ TAPE |
| R305 | 0195871R | RMC73S-2A750JR | R394 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE |
| R306 | 0195871R | RMC73S-2A750JR | R3A1 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R307 | 0195871R | RMC73S-2A750JR | R3A2 | 0195891R | RES 2125 CHIP 1/16W 470J TAPE |
| R308 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE | R3A3 | 0195950R | RES 2125 CHIP 1/16W 100KJ TAPE |
| R309 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R3A4 | 0195950R | RES 2125 CHIP 1/16W 100KJ TAPE |
| R310 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE | R3A5 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R311 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R3A6 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R312 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R3A7 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R313 | 0195871R | RMC73S-2A750JR | R3A8 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R314 | 0195871R | RMC73S-2A750JR | R3E1 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE |
| R315 | 0195871R | RMC73S-2A750JR | R3E2 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE |
| R316 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE | R3E3 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R317 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R3E4 | 0195897R | RES 2125 CHIP 1/16W 820J TAPE |
| R318 | 0195871R | RMC73S-2A750JR | R3E6 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R319 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R3E7 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R320 | 0195871R | RMC73S-2A750JR | R3E8 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R321 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R3F1 | 0195950R | RES 2125 CHIP 1/16W 100KJ TAPE |
| R322 | 0195871R | RMC73S-2A750JR | R3F2 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R323 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R3F3 | 0195950R | RES 2125 CHIP 1/16W 100KJ TAPE |
| R324 | 0195871R | RMC73S-2A750JR | R3F4 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R325 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE | R3F5 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R326 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R3F6 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R327 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R3F7 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R328 | 0195918R | RES 2125 CHIP 1/16W 5.6KJ TAPE | R3F8 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R329 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R3G2 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R330 | 0195891R | RES 2125 CHIP 1/16W 470J TAPE | R3G3 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R331 | 0195883R | RES 2125 CHIP 1/16W 220J TAPE | R3G4 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R332 | 0195891R | RES 2125 CHIP 1/16W 470J TAPE | R3G5 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R334 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE | R601 | 0700049M | RES.-CARBON FLM 1/16W 4.7K-JB |
| R341 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | R602 | 0700061M | RES.-CARBON FLM 1/16W 33K-JB |
| R342 | 0114137M | REG.-CARBON FILM 1/4W 180-JB | R603 | 0700049M | RES.-CARBON FLM 1/16W 4.7K-JB |

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| SYMBOL NO. | PART NO. | PART DESCRIPTION | SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|---|---|---|
| R604 | 0700065M | RES.-CARBON FLM 1/16W 68K-JB | R722 | 0195904R | RESISTOR 2125 CHIP 1/16W 1.5KJ TAPE |
| R605 | 0700062M | RES.-CARBON FLM 1/16W 39K-JB | R723 | 0195922R | RES 2125 CHIP 1/16W 8.2KJ TAPE |
| R611 | 0700062M | RES.-CARBON FLM 1/16W 39K-JB | R725 | 0195948R | RESISTOR MINI-CHIP RMC1/16 91K-J TAPE |
| R612 | 0113737M | RES.-CARBON FLM 1/2W 330JB | R726 | 0700047M | RES.-CARBON FLM 1/16W 3.3K-JB |
| R613 | 0187104M | RES.-CARBON FLM 1/16W 43K-JB | R727 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| R614 | 0119722M | RES.-METAL OXIDE FILM 1.0-JB/W | R728 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R615 | 0119722M | RES.-METAL OXIDE FILM 1.0-JB/W | R729 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R616 | AT01029S | RES.MTL FLM 1W 1.0 OHM | R749 | 0195879R | RES 2125 CHIP 1/16W 150J TAPE |
| R617 | AT01083S | RES.MTL OXIDE FLM 1W 100 OHM | R751 | 0700034M | RES.-CARBON FLM 1/16W 330-JB |
| R618 | 0113725M | RESISTOR CARBON FILM SRD1/2P-B 100-J | R752 | 0700035M | RES.-CARBON FLM 1/16W 390-JB |
| R619 | 0113725M | RESISTOR CARBON FILM SRD1/2P-B 100-J | R753 | 0113758M | RES.-CARBON FLM 1/2W 2.2K-JB |
| R620 | 0113725M | RESISTOR CARBON FILM SRD1/2P-B 100-J | R754 | AT00338S | RES.MTL OXIDE FLM 3W 180 OHM |
| R621 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB | R755 | AT00338S | RES.MTL OXIDE FLM 3W 180 OHM |
| R622 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB | R758 | 0100031M | RES.-CARBON FLM 1/8W 39-JB |
| R631 | 0700027M | RES.-CARBON FLM 1/16W 100-JB | R759 | AT01092S | RES.MTL OXIDE FLM 1W 220 OHM |
| R632 | 0700049M | RES.-CARBON FLM 1/16W 4.7K-JB | R760 | AT01092S | RES.MTL OXIDE FLM 1W 220 OHM |
| R651 | 0700044M | RES.-CARBON FLM 1/16W 1.8K-JB | R766 | 0700052M | RES.-CARBON FLM 1/16W 6.8K-JB |
| R652 | 0700058M | RES.-CARBON FLM 1/16W 22K-JB | R767 | 0700058M | RES.-CARBON FLM 1/16W 22K-JB |
| R658 | 0100063M | RES.-CARBON FLM 1/8W 820-JB | R769 | 0700048M | RES.-CARBON FLM 1/16W 3.9K-JB |
| R659 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | R770 | 0700067M | RES.-CARBON FLM 1/16W 100K-JB |
| R660 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | R771 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB |
| R661 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB | R772 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB |
| R662 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB | R773 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R663 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB | R775 | 0114181M | RESISTOR-CARBON FILM SRD 1/4 PF 6.8K-J |
| R664 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB | R776 | 0700055M | RES.-CARBON FLM 1/16W 12K-JB |
| R667 | 0700053M | RES.-CARBON FLM 1/16W 8.2K-JB | R777 | 0700032M | RES.-CARBON FLM 1/16W 220-JB |
| R668 | 0700055M | RES.-CARBON FLM 1/16W 12K-JB | R778 | 0188122M | RES.-CARBON FLM 220-J 1/2W |
| R669 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB | R780 | AT00332S | RES.MTL OXIDE FLM 3W 100 OHM |
| R670 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB | R788 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| R671 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB | R7C1 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| R673 | 0113725M | RESISTOR CARBON FILM SRD1/2P-B 100-J | RA01 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R674 | 0114041M | RESISTOR-CARBON FILM SRD 1/4P 10J | RA02 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R675 | AT01134S | RES.MTL OXIDE FLM 1W 8.2K OHM | RA03 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R676 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB | RA04 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R678 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB | RA05 | 0195960R | RES MINI-CHIP RMC1/16 270K-J TAPE |
| R681 | 0700045M | RES.-CARBON FLM 1/16W 2.2K-JB | RA06 | 0195960R | RES MINI-CHIP RMC1/16 270K-J TAPE |
| R701B | 0113737M | RES.-CARBON FLM 1/2W 330JB | RA07 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R702 | 0700049M | RES.-CARBON FLM 1/16W 4.7K-JB | RA08 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R703 | 0700027M | RES.-CARBON FLM 1/16W 100-JB | RA09 | 0195960R | RES MINI-CHIP RMC1/16 270K-J TAPE |
| R704 | 0700027M | RES.-CARBON FLM 1/16W 100-JB | RA10 | 0195960R | RES MINI-CHIP RMC1/16 270K-J TAPE |
| R705 | 0195904R | RESISTOR 2125 CHIP 1/16W 1.5KJ TAPE | RA11 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R706 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | RA12 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R708 | 0700045M | RES.-CARBON FLM 1/16W 2.2K-JB | RA13 | 0195960R | RESISTOR MINI-CHIP RMC1/16 270K-J TAPE |
| R709 | 0195908R | RES.2125 CHIP 1/10W 2.2KJ TAPE | RA14 | 0195960R | RESISTOR MINI-CHIP RMC1/16 270K-J TAPE |
| R710 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | RA15 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R711 | 0100065M | RES.-CARBON FLM 1/8W 1K-JB | RA16 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R712 | 0196881R | RES 2125CHIP 1/10W 510-F TAPE | RA17 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R713 | 0700047M | RES.-CARBON FLM 1/16W 3.3K-JB | RA18 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R714 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | RA19 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R715 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE | RA20 | 0195950R | RES 2125 CHIP 1/16W 100KJ TAPE |
| R716 | 0700067M | RES.-CARBON FLM 1/16W 100K-JB | RA21 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R717 | 0700059M | RES.-CARBON FLM 1/16W 27K-JB | RA22 | 0195950R | RES 2125 CHIP 1/16W 100KJ TAPE |
| R718 | 0700058M | RES.-CARBON FLM 1/16W 22K-JB | RA23 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R719 | 0700058M | RES.-CARBON FLM 1/16W 22K-JB | RA24 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| R720 | 0195947R | RES.2125 CHIP 1/10W 82KJ TAPE | RA25 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| R721 | 0195927R | RES 2125 CHIP 1/16W 12KJ TAPE | RA26 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |

# REPLACEMENT PARTS LIST

**PRODUCT SERVICE NOTE:** Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

| SYMBOL NO. | PART NO. | PART DESCRIPTION | SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|---|---|---|
| RC01 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE | RH26 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB |
| RC02 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE | RH27 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB |
| RC03 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE | RH28 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB |
| RF02 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB | RH29 | 0700027M | RES.-CARBON FLM 1/16W 100-JB |
| RF03 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB | ⚠ RH31 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| RF04 | 0700067M | RES.-CARBON FLM 1/16W 100K-JB | ⚠ RH32 | 0114281M | RESISTOR-CARBON FILM SRD 1/4P 100K-J |
| RF05 | 0700055M | RES.-CARBON FLM 1/16W 12K-JB | RH33 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB |
| RF06 | 0700043M | RES.-CARBON FLM 1/16W 1.5K-JB | ⚠ RH34 | 0114281M | RESISTOR-CARBON FILM SRD 1/4P 100K-J |
| RF07 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB | ⚠ RH35 | 0119639M | RES.-MTL FLM 1/8W 22K-FB |
| RF08 | 0700042M | RES.-CARBON FLM 1/16W 1.2K-JB | ⚠ RH36 | 0119639M | RES.-MTL FLM 1/8W 22K-FB |
| RF09 | 0700067M | RES.-CARBON FLM 1/16W 100K-JB | ⚠ RH37 | 0119639M | RES.-MTL FLM 1/8W 22K-FB |
| RF10 | 0700056M | RES.-CARBON FLM 1/16W 15K-JB | ⚠ RH38 | 0119625M | RES.-MTL FLM 1/8W 5.6K-FB |
| RF11 | 0700025M | RES.-CARBON FLM 1/16W 68-J | ⚠ RH39 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB |
| RF12 | 0700027M | RES.-CARBON FLM 1/16W 100-JB | RH40 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB |
| RF13 | AT03654M | RES.MTL GRAZD FLM 1/2W 180K | ⚠ RH42 | 0100129M | RES.-CARBON FLM 1/8W 470K-JB |
| RF14 | AT03654M | RES.MTL GRAZD FLM 1/2W 180K | ⚠ RH43 | 0114143M | RES.-CARBON FLM 1/4W 330-JB |
| RF15 | AT03654M | RES.MTL GRAZD FLM 1/2W 180K | ⚠ RH44 | AW00208 | TRIMMER RESISTOR 100KOHM 1/2W |
| RF16 | AT03662M | RES.MTL GRAZD FLM 1/2W 560K | ⚠ RH45 | 0119653M | RES.-MTL FLM 1/8W 82K-FB |
| RF17 | AT03662M | RES.MTL GRAZD FLM 1/2W 560K | RH47 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB |
| RF18 | 0700057M | RES.-CARBON FLM 1/16W 18K-JB | RH48 | 0179597M | RES.-MTL.GRAZED FILM 5.6M-J TAPE |
| RF19 | 0700049M | RES.-CARBON FLM 1/16W 4.7K-JB | RH49 | 0700043M | RES.-CARBON FLM 1/16W 1.5K-JB |
| RF20 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB | RH50 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB |
| RF21 | AT03662M | RES.MTL GRAZD FLM 1/2W 560K | RH51 | 0700055M | RES.-CARBON FLM 1/16W 12K-JB |
| RF22 | AT03662M | RES.MTL GRAZD FLM 1/2W 560K | RH52 | 0700067M | RES.-CARBON FLM 1/16W 100K-JB |
| RF23 | 0700058M | RES.-CARBON FLM 1/16W 22K-JB | RH53 | 0700045M | RES.-CARBON FLM 1/16W 2.2K-JB |
| RF24 | 0700039M | RES.-CARBON FLM 1/16W 820-JB | ⚠ RH54 | 0187088M | RES.-CARBON FLM 1/16W 9.1K-JB |
| RF25 | AT03661M | RES.MTL GRAZD FLM 1/2W 470K | ⚠ RH55 | 0187106M | RES.-CARBON FLM 1/16W 51K-JB |
| RF26 | 0113783M | RES.-CARBON FLM 1/2W 22K-JB | RH56 | 0100091M | RES.-CARBON FLM 1/8W 12K-JB |
| RF27 | 0700045M | RES.-CARBON FLM 1/16W 2.2K-JB | RH58 | 0113789M | RESISTOR-CARBON FILM SRD1/2P-B 39K-J |
| RF35 | AT00361S | RES.MTL OXIDE FLM 3W 1.2K OHM | RH59 | 0113789M | RESISTOR-CARBON FILM SRD1/2P-B 39K-J |
| RF36 | 0188171M | RES.-CARBON FLM 1M-JB 1/2W | RH60 | 0700036M | RES.-CARBON FLM 1/16W 470-JB |
| RF40 | 0114163M | RES.-CARBON FLM 1/4W 1.2K-JB | RH61 | 0100069M | RES.-CARBON FLM 1/8W 1.5K-JB |
| RH01 | 0700047M | RES.-CARBON FLM 1/16W 3.3K-JB | RH62 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB |
| RH02 | 0113731M | RES.-CARBON FLM 1/2W 180-JB | RH63 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB |
| RH03 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB | RH64 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB |
| RH04 | 0700027M | RES.-CARBON FLM 1/16W 100-JB | RH65 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB |
| RH05 | 0700053M | RES.-CARBON FLM 1/16W 8.2K-JB | RH66 | 0700066M | RES.-CARBON FLM 1/16W 82K-JB |
| RH06 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | RH67 | 0113744M | RESISTOR CARBON FILM SRD1/2P-B 560-J |
| RH07 | 0700052M | RES.-CARBON FLM 1/16W 6.8K-JB | RH68 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB |
| RH08 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB | RH70 | 0188171M | RES.-CARBON FLM 1M-JB 1/2W |
| RH09 | 0700051M | RES.-CARBON FLM 1/16W 5.6K-JB | RH72 | 0100123M | RES.-CARBON FLM 1/8W 270K-JB |
| RH10 | 0700055M | RES.-CARBON FLM 1/16W 12K-JB | ⚠ RH73 | 0119653M | RES.-MTL FLM 1/8W 82K-FB |
| RH11 | 0700067M | RES.-CARBON FLM 1/16W 100K-JB | RH77 | 0700045M | RES.-CARBON FLM 1/16W 2.2K-JB |
| RH12 | 0100129M | RES.-CARBON FLM 1/8W 470K-JB | RH80 | 0119653M | RES.-MTL FLM 1/8W 82K-FB |
| RH13 | 0700039M | RES.-CARBON FLM 1/16W 820-JB | RK01 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB |
| RH14 | 0700062M | RES.-CARBON FLM 1/16W 39K-JB | RK02 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB |
| RH15 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB | RK03 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB |
| RH16 | 0700055M | RES.-CARBON FLM 1/16W 12K-JB | RK04 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB |
| RH17 | 0700062M | RES.-CARBON FLM 1/16W 39K-JB | RK05 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB |
| RH18 | 0114057M | RESISTOR-CARBON FILM SRD 1/4 PF 47-J | RK06 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB |
| RH19 | 0188124M | RES.-CARBON FLM 1/4W 330-JB | RK07 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB |
| ⚠ RH20 | 0148052 | RES.-WIRE WOUND 0.68-K 3W | RK08 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB |
| RH22 | 0119732M | RES.-METAL OXIDE FILM 1.2-JB | RK09 | 0100057M | RES.-CARBON FLM 1/8W 470-JB |
| RH23 | 0119732M | RES.-METAL OXIDE FILM 1.2-JB | RK10 | 0700042M | RES.-CARBON FLM 1/16W 1.2K-JB |
| RH24 | 0100079M | RES.-CARBON FLM 1/8W 3.9K-JB | RK11 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| RH25 | 0114209M | RESISTOR-CARBON FILM SRD 1/4 PF 22K-J | RK12 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |

# REPLACEMENT PARTS LIST

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| SYMBOL NO. | PART NO. | PART DESCRIPTION | SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|---|---|---|
| RK13 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | RN13 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB |
| RK17 | 0700046M | RES.-CARBON FLM 1/16W 2.7K-JB | RN14 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB |
| RK18 | 0700048M | RES.-CARBON FLM 1/16W 3.9K-JB | RN15 | 0700064M | RES.-CARBON FLM 1/16W 56K-JB |
| RK22 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | RN16 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| RK23 | 0700052M | RES.-CARBON FLM 1/16W 6.8K-JB | RN17 | 0700056M | RES.-CARBON FLM 1/16W 15K-JB |
| RK24 | 0700043M | RES.-CARBON FLM 1/16W 1.5K-JB | RN18 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| RK25 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB | RN19 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB |
| RK26 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB | RN20 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB |
| RK27 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB | RP01 | 0188165M | RES.-CARBON FLM 390K-J 1/2W |
| RK28 | 0700027M | RES.-CARBON FLM 1/16W 100-JB | RP05 | AT01136S | RES.MTL OXIDE FLM 1W 10K OHM |
| RK29 | 0700027M | RES.-CARBON FLM 1/16W 100-JB | RP06 | AT01136S | RES.MTL OXIDE FLM 1W 10K OHM |
| RK30 | 0700027M | RES.-CARBON FLM 1/16W 100-JB | RP07 | 0700038M | RES.-CARBON FLM 1/16W 680-JB |
| RK31 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | RP08 | 0700047M | RES.-CARBON FLM 1/16W 3.3K-JB |
| RK32 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | RP09 | 0188104M | RES.-CARBON FLM 1/2W 10-JB |
| RK33 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | RP10 | AT01531S | METAL FILM RESISTOR(0.1OHM1/2W ) |
| RK34 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB | RP11 | AT01531S | METAL FILM RESISTOR(0.1OHM1/2W ) |
| RK35 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB | RP12 | AT01531S | METAL FILM RESISTOR(0.1OHM1/2W ) |
| RK36 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB | RP13 | 0700043M | RES.-CARBON FLM 1/16W 1.5K-JB |
| RK37 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB | RP14 | 0700047M | RES.-CARBON FLM 1/16W 3.3K-JB |
| RK38 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB | RP15 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB |
| RK39 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB | RP16 | 0700023M | RES.-CARBON FLM 1/16W 47-J |
| RK40 | 0700047M | RES.-CARBON FLM 1/16W 3.3K-JB | RP17 | 0700042M | RES.-CARBON FLM 1/16W 1.2K-JB |
| RK42 | AT01549S | METAL FILM RESISTOR(2.2OHM 1W ) | RP19 | 0700029M | RES.-CARBON FLM 1/16W 150-JB |
| RK43 | 0110229S | RES.-MTL OXIDE FLM 220-JS | RP20 | 0700047M | RES.-CARBON FLM 1/16W 3.3K-JB |
| RK44 | 0700047M | RES.-CARBON FLM 1/16W 3.3K-JB | RP21 | 0700055M | RES.-CARBON FLM 1/16W 12K-JB |
| RK46 | AT01545S | METAL FILM RESISTOR(1.5OHM 1W ) | RP22 | 0100071M | RES.-CARBON FLM 1/8W 1.8K-JB |
| RK47 | 0110225S | RES.MTL OXIDE FLM 150-JS 2W | RP23 | 0700049M | RES.-CARBON FLM 1/16W 4.7K-JB |
| RK48 | 0700047M | RES.-CARBON FLM 1/16W 3.3K-JB | RP24 | 0700051M | RES.-CARBON FLM 1/16W 5.6K-JB |
| RK50 | AT01549S | METAL FILM RESISTOR(2.2OHM 1W ) | RP25 | 0700055M | RES.-CARBON FLM 1/16W 12K-JB |
| RK51 | 0110229S | RES.-MTL OXIDE FLM 220-JS | RP26 | 0700049M | RES.-CARBON FLM 1/16W 4.7K-JB |
| RK52 | 0700047M | RES.-CARBON FLM 1/16W 3.3K-JB | RP27 | 0700049M | RES.-CARBON FLM 1/16W 4.7K-JB |
| RK54 | AT01545S | METAL FILM RESISTOR(1.5OHM 1W ) | RP28 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB |
| RK55 | 0110225S | RES.MTL OXIDE FLM 150-JS 2W | RP29 | 0100047M | RES.-CARBON FLM 1/8W 180-JB |
| RK56 | 0700047M | RES.-CARBON FLM 1/16W 3.3K-JB | RP30 | 0700047M | RES.-CARBON FLM 1/16W 3.3K-JB |
| RK58 | AT01554S | METAL FILM RESISTOR(3.3OHM 1W ) | RP31 | 0119695M | RES.-MTL OXIDE FLM 1W 0.47-F |
| RK59 | 0110229S | RES.-MTL OXIDE FLM 220-JS | RP32 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB |
| RK60 | 0700047M | RES.-CARBON FLM 1/16W 3.3K-JB | RP33 | 0700058M | RES.-CARBON FLM 1/16W 22K-JB |
| RK62 | AT01547S | METAL FILM RESISTOR(1.8OHM 1W ) | RP34 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB |
| RK63 | 0110225S | RES.MTL OXIDE FLM 150-JS 2W | RP35 | 0188156M | RES.-CARBON FLM 82K-J 1/2W |
| RK64 | 0700055M | RES.-CARBON FLM 1/16W 12K-JB | RP36 | 0700049M | RES.-CARBON FLM 1/16W 4.7K-JB |
| RK65 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB | RP37 | 0100091M | RES.-CARBON FLM 1/8W 12K-JB |
| RK90 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB | RP38 | 0188154M | RES.-CARBON FLM 1/2W 56K-JB |
| RK92 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | RP39 | 0188154M | RES.-CARBON FLM 1/2W 56K-JB |
| RK99 | 0188103M | RES.-CARBON FLM 8.2-J 1/2W | RP40 | 0700047M | RES.-CARBON FLM 1/16W 3.3K-JB |
| RN01 | 0700052M | RES.-CARBON FLM 1/16W 6.8K-JB | RP41 | 0700047M | RES.-CARBON FLM 1/16W 3.3K-JB |
| RN02 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | RP42 | 0700043M | RES.-CARBON FLM 1/16W 1.5K-JB |
| RN03 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB | RP43 | 0700045M | RES.-CARBON FLM 1/16W 2.2K-JB |
| RN04 | 0700067M | RES.-CARBON FLM 1/16W 100K-JB | RP44 | 0700058M | RES.-CARBON FLM 1/16W 22K-JB |
| RN05 | 0700052M | RES.-CARBON FLM 1/16W 6.8K-JB | RP45 | 0700058M | RES.-CARBON FLM 1/16W 22K-JB |
| RN06 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB | RP46 | 0100091M | RES.-CARBON FLM 1/8W 12K-JB |
| RN07 | 0700051M | RES.-CARBON FLM 1/16W 5.6K-JB | RP47 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| RN08 | 0700044M | RES.-CARBON FLM 1/16W 1.8K-JB | RP48 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB |
| RN09 | 0700061M | RES.-CARBON FLM 1/16W 33K-JB | RP49 | 0700052M | RES.-CARBON FLM 1/16W 6.8K-JB |
| RN10 | 0700057M | RES.-CARBON FLM 1/16W 18K-JB | RP50 | 0700063M | RES.-CARBON FLM 1/16W 47K-JB |
| RN11 | 0700058M | RES.-CARBON FLM 1/16W 22K-JB | RP52 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB |
| RN12 | 0700051M | RES.-CARBON FLM 1/16W 5.6K-JB | ⚠ RP53 | 0700039M | RES.-CARBON FLM 1/16W 820-JB |

# REPLACEMENT PARTS LIST

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| SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|
| ⚠ RP54 | 0700043M | RES.-CARBON FLM 1/16W 1.5K-JB |
| RP55 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| RP57 | 0700032M | RES.-CARBON FLM 1/16W 220-JB |
| RP58 | 0700041M | RES.-CARBON FLM 1/16W 1.0K-JB |
| RP59 | 0700047M | RES.-CARBON FLM 1/16W 3.3K-JB |
| RP60 | 0700038M | RES.-CARBON FLM 1/16W 680-JB |
| RP62 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB |
| RP63 | 0100069M | RES.-CARBON FLM 1/8W 1.5K-JB |
| RP64 | 0700054M | RES.-CARBON FLM 1/16W 10K-JB |
| RX39 | 0195935R | RES 2125 CHIP 1/16W 27K-J TAPE |
| RX40 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE |
| RX41 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RX42 | 0195912R | RES 2125 CHIP 1/16W 3.3KJ TAPE |
| RX44 | 0195935R | RES 2125 CHIP 1/16W 27K-J TAPE |
| RX45 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE |
| RX46 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RX47 | 0195912R | RES 2125 CHIP 1/16W 3.3KJ TAPE |
| RX49 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE |
| RX50 | 0195941R | RESISTOR 2125 CHIP 1/16W 47KJ TAPE |
| RX51 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RX52 | 0195908R | RES.2125 CHIP 1/10W 2.2KJ TAPE |
| RX68 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RX69 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RX75 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RX76 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RX77 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RX78 | 0195935R | RES 2125 CHIP 1/16W 27K-J TAPE |
| RX79 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| RX80 | 0195902R | RES 2125 CHIP 1/16W 1.2KJ TAPE |
| RX81 | 0195914R | RES 2125 CHIP 1/16W 3.9KJ TAPE |
| RX82 | 0195925R | RES 2125 CHIP 1/16W 10KJ TAPE |
| RX83 | 0195891R | RES 2125 CHIP 1/16W 470J TAPE |
| RX84 | 0195891R | RES 2125 CHIP 1/16W 470J TAPE |
| RX85 | 0195891R | RES 2125 CHIP 1/16W 470J TAPE |
| RX86 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RX87 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RX88 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RX89 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RX90 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RX91 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RX97 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RX98 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RX99 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| RXE1 | 0195908R | RES.2125 CHIP 1/10W 2.2KJ TAPE |
| RXE7 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RXE8 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RY01 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RY03 | 0195916R | RESISTOR 2125 CHIP 1/16W 4.7KJ TAPE |
| RY04 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RY05 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RY09 | 0195920R | RES 2125 CHIP 1/16W 6.8KJ TAPE |
| RY15 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RY17 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| RY18 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| RY20 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RY26 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RY27 | 0195920R | RES 2125 CHIP 1/16W 6.8KJ TAPE |
| RY32 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RY34 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| RY35 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| RY37 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RY39 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RY40 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RY41 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RY43 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RY44 | 0195920R | RES 2125 CHIP 1/16W 6.8KJ TAPE |
| RY50 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RY52 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| RY53 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| RY55 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RY57 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RY58 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RY61 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RY62 | 0195910R | RES.2125 CHIP 1/16W 2.7KJ TAPE |
| RY63 | 0195933R | RES.2125 CHIP 1/16W 22KJ TAPE |
| RY64 | 0195931R | RES 2125 CHIP 1/16W 18KJ TAPE |
| RY67 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RY69 | 0195887R | RES 2125 CHIP 1/16W 330J TAPE |
| RY70 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE |
| RY71 | 0195893R | RES 2125 CHIP 1/16W 560J TAPE |
| RY72 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RY73 | 0195891R | RES 2125 CHIP 1/16W 470J TAPE |
| RY76 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RY80 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RY81 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
| RY82 | 0195900R | RES 2125 CHIP 1/16W 1KJ TAPE |
| RY83 | 0195862R | RES 2125 CHIP 1/16W 33J TAPE |
| RY90 | 0195927R | RES 2125 CHIP 1/16W 12KJ TAPE |
| RY92 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RY93 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RY95 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RY96 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RY97 | 0195250R | RES 2125 CHIP 1/16W 000 TAPE |
| RZ98 | 0195875R | RES 2125 CHIP 1/16W 100J TAPE |
|  |  | **TRANSFORMERS** |
| ⚠ T751 | 2272941 | HORIZ DRIVE TRANS |
| T752 | BT01231 | PT-EI30F5US-HOT(DP8X) DEF. OUTPUT |
| ⚠ TH01 | BW00633 | HFL1735YP-RC 32K/2H FLYBACK TRANS. |
| ⚠ TP91 | BT01271 | PT-EE49F17U-240W-TDK |
|  |  | **MISCELLANEOUS** |
| EAN | 2974056S | 3J CONNE SEH UL1007 L=160 |
| ED11 | EY00791 | PJX-LEAD-PLUGPIN |
| ED12 | EY00791 | PJX-LEAD-PLUGPIN |
| ED13 | EY00791 | PJX-LEAD-PLUGPIN |
| EFF | EF08451 | CO-01A-A0R0-241-ORA |
| GF01 | CJ00072R | SEMICONDUCTOR 252FB-K2M |
| JY01 | ES00119 | JACK(15PIN) |
| N001A | MD04671 | SHIELD CASE DP85A TC-30 T=0.4 |

# REPLACEMENT PARTS LIST

**PRODUCT SERVICE NOTE:** Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

| SYMBOL NO. | PART NO. | PART DESCRIPTION | SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|---|---|---|
| N001B | MD04681 | SHIELD PLATE DP85A TC-30 T=0.4 | PFC2 | 2675593 | 15P PLUG PIN |
| N010 | MC00104 | HEAT SINK P10 H45 19 A6063S-75 | PFS | 2902268 | PLUG PIN SUB MINI 9P |
| N010N | 4520883 | 3*12 SCREW WITH WASHER | PFT | 2902251 | 11P PLUG PIN |
| N010S | 9414017 | SILICONE COMPOUND(G-746) | PMB | ED01597U | PLUG CP-06BP5R0VU-TBL#3,5N |
| N165 | 3734532 | LEAD CLAMPER B | PMG | ED01597U | PLUG CP-06BP5R0VU-TBL#3,5N |
| N601 | MA01112 | HEAT SINK (V) DP86A A1100P-H14 | PMR | ED01597U | PLUG CP-06BP5R0VU-TBL#3,5N |
| N602 | 4520883 | 3*12 SCREW WITH WASHER | PP1 | 2663821 | 2P SUB MINI PLUG PIN |
| N603 | MF00371 | MICA SHEET (DP86) | PQD1 | ED01853 | PLUG 5289-4A |
| N701 | MA01091 | POWER HEAT SINK METAL (B) 1A1100P-H14 | PQD2 | ED00386 | PLUG 7P LOCK 2.5MM JST |
| N702 | 4520883 | 3*12 SCREW WITH WASHER | PQS1 | ED00388 | PLUG 9P LOCK 2.5MM JST |
| N703 | KL00051 | IC SPRING | PQS2 | ED00387 | PLUG 8P LOCK 2.5MM JST |
| N704 | 2786301 | TRANSISTOR SPACER (TO-3P) | PQS4 | ED01852 | PLUG 5289-3A |
| N705 | 2786281 | MICA SHEET | PSD1 | ED01471U | PLUG 07BP1R2HUTWGP-A1 |
| N711 | NA03111 | CHASSIS PWB BKT AP5 CL1 SECC20/20E | PSD1 | ED01491U | CONNECTOR 07BS1R2VUTWGX-A1 |
| N715 | NA20921 | CHASSIS PWB BKT AP7X L1 SECC20/20E | PSD2 | ED01473U | PLUG 13BP1R2HUTWGP-A1 |
| N721 | 4491082 | CHASSIS PWB BKT FB2 SECC20/20E | PSD2 | ED01493U | CONNECTOR 13BS1R2VUTWGX-A1 |
| N725 | NA03131 | CHASSIS PWB BKT AP5 BB1 SECC20/20E | PSD3 | ED01472U | PLUG 11BP1R2HUTWGP-A1 |
| N730 | 4159427 | 3X10 SCREW WITH WASHER STEEL | PSD3 | ED01492U | CONNECTOR 11BS1R2VUTWGX-A1 |
| N740 | 4531761 | SCREEN 3X16 TAPPING W/S-WASHER STEEL | PSD4 | ED01472U | PLUG 11BP1R2HUTWGP-A1 |
| N745 | 2781697 | YC20A INSULATION WASHER | PSD4 | ED01492U | CONNECTOR 11BS1R2VUTWGX-A1 |
| NF01 | MC00104 | HEAT SINK P10 H45 19 A6063S-75 | PST1 | ED00516 | CP-TAC-L20P-A1 |
| NF02 | 4520883 | 3*12 SCREW WITH WASHER | PST1 | ED00576 | CP-TAC-L20X-A1 |
| NH01 | MA01081 | POWER HEAT SINK METAL (A) 1 A1100P-H14 | PST2 | ED00516 | CP-TAC-L20P-A1 |
| NH02 | 4520883 | 3*12 SCREW WITH WASHER | PST2 | ED00576 | CP-TAC-L20X-A1 |
| NH03 | KL00051 | IC SPRING | PST3 | ED00516 | CP-TAC-L20P-A1 |
| NH11 | NT00981 | FBT HOLDER AP74 PS(HI=100%) | PST3 | ED00576 | CP-TAC-L20X-A1 |
| NH12 | 4519505 | 3*16 B-TITE SCREW | PSU1 | ED00576 | CP-TAC-L20X-A1 |
| NI3F | 3446473 | HEATSINK H30 P10 | PSU2 | ED00576 | CP-TAC-L20X-A1 |
| NI3N | 4520883 | 3*12 SCREW WITH WASHER | PSZ1 | ED00516 | CP-TAC-L20P-A1 |
| NK01 | 3446473 | HEATSINK H30 P10 | PSZ1 | ED00576 | CP-TAC-L20X-A1 |
| NK02 | 3446473 | HEATSINK H30 P10 | PSZ2 | ED00516 | CP-TAC-L20P-A1 |
| NK03 | 4520883 | 3*12 SCREW WITH WASHER | PSZ2 | ED00576 | CP-TAC-L20X-A1 |
| NK04 | 4520883 | 3*12 SCREW WITH WASHER | PYC1 | ED01783 | PLUG 23P-HQM-1 |
| NK05 | MC00193 | CONV. HEAT SINK L=60 DP85 A6063S-T5 | PYC2 | ED01783 | PLUG 23P-HQM-1 |
| NK06 | 4520885 | 3*16 SCREW WITH WASHER | PZC | 2902247 | PLUG PIN SUB MINI 8P |
| NK07 | 4531761 | SCREEN 3X16 TAPPING W/S-WASHER STEEL | PZV | 2902243 | PLUG PIN SUB MINI 4P |
| NK08 | NA20781 | CONV. IC SUPPORT BKT AP74 SECC20/20E | SK01 | FE00061 | 1P TACT SWITCH |
| NP9A | MA01071 | HEAT SINK DP85 (C) A1100P-H14 | U002 | HC00311 | TUNER UNIT V6-A30FT MAIN TUNER |
| NPIN | 4520883 | 3*12 SCREW WITH WASHER | U003 | 2429691 | TUNER V8-A68FT PiP TUNER |
| NQ1F | 3446473 | HEATSINK H30 P10 | U004 | CS00192 | 3DYC-PINP UNIT ASY(HC3152) |
| NQ1N | 4520883 | 3*12 SCREW WITH WASHER | U006 | CS00185 | FLEX CONT.UNIT ASY(HC5125) |
| PCB | 2903544 | 4P PLUG PIN WITH BASE | UKDG | CS00224 | DCU P.W.B. (HC2114) |
| PCCD | 2675282 | PLUG 3P | WJ01 | 9374575 | UL CSA1007-24HP CODE GREEN |
| PCCD | 2959052 | PIN POST (PH 3P) | X001 | 2163971 | CERAMIC FILTER 4MHZ |
| PCG | 2903544 | 4P PLUG PIN WITH BASE | X701 | 2786681 | CERAMIC OSCILLATOR 500KHZ |
| PCR | 2903544 | 4P PLUG PIN WITH BASE | Z | 9449602 | ADHESIVE TAPE(NITTOH NO.747 W6) |
| PDC1 | ED00384 | PLUG 5P LOCK 2.5MM JST | Z | 9451104 | VARNISH CLOTH TUBE 0.8X1.8 YELLOW |
| PDD1 | ED00198 | 10P CONNECTOR WITH LOCK | ZNS1 | 9414017 | SILICONE COMPOUND(G-746) |
| PDD1 | 2675588 | 10P PLUG PIN | ZP57 | 9563445 | EXCEED GLASS TUBE HG-2E 3.5 |
| PDD2 | ED00198 | 10P CONNECTOR WITH LOCK | ZP9A | 9449545 | NITTO TAPE NO.5 W20 (BLACK) |
| PDD2 | 2675588 | 10P PLUG PIN | | | |
| PDF | ED01596U | PLUG CP-04BP5R0VU-TBL#2,3N | | | |
| PDG | ED00572 | CP-TAC-L15X-A1 | | | |
| PDS | ED00576 | CP-TAC-L20X-A1 | | | |
| PDS1 | 2959062 | PIN POST (PH 12P) | | | |
| PFC1 | 2675593 | 15P PLUG PIN | | | |

# 53SDX89BA/60SDX88BA
# Quick Reference Parts List

**PRODUCT SERVICE NOTE:** Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

| SYMBOL NO. | PART NO. | PART DESCRIPTION |
|---|---|---|
| ⚠ E992 | AZ00109M | RAW B+ PROTECTOR |
| ⚠ E993 | AZ00108M | 6.3 V HEATER PROTECTOR |
| ⚠ E994 | AZ00109M | 24 V PROTECTOR |
| ⚠ E994 | AZ00109M | F/R AUDIO B+ PROTECTOR |
| ⚠ E995 | AZ00109M | CENTER AUDIO B+ PROTECTOR |
| ⚠ E995 | AZ00109M | -13 V PROTECTOR |
| ⚠ E996 | AZ00108M | 33V PROTECTOR |
| ⚠ E998 | AZ00101M | 24.5 V POWER FAIL PROT. |
| ⚠ E999 | AZ00108M | -7 V PROTECTOR |
| ⚠ EP91 | AZ00109M | RAW 150V PROTECTOR |
| ⚠ EP92 | AZ00107M | 220 V PROTECTOR |
| ⚠ EP96 | AZ00109M | 28 V PROTECTOR |
| ⚠ EP97 | AZ00104M | -28 V PROTECTOR |
| ⚠ F901 | 2722359 | MAIN FUSE 6 AMP |
| HM01 | CZ00522 | R/C INFRARED RECEIVER |
| I001 | CP06343U | MAIN MICROPROCESSOR |
| I002 | CP05272U | EEPROM IC |
| I003 | CP05261U | DAC (Expander) IC |
| I008 | CP05571 | RGB PROCESSOR |
| I301 | CP00742U | A/V SELECTOR |
| I302 | CP05572 | 9 V REGULATOR |
| I304 | CW00022 | COMB FILTER |
| I401 | 2004751 | FRONT AUDIO OUTPUT |
| I402 | 2004751 | CENTER AUDIO OUTPUT |
| I403 | 2004751 | REAR AUDIO OUTPUT |
| I601 | CZ00761U | VERTICAL OUTPUT |
| I651 | 2365452 | SIDE PIN COMPARATOR |
| I701 | CP05571 | HORIZ. VCC REGULATOR |
| I702 | CZ00751U | HOIRIZ. & VERT. DRIVE IC |
| I703 | CP00401 | VERTICAL PARABOLA COMP. |
| ⚠ I901 | CZ00451 | SWITCHING REGULATOR |
| ⚠ I904 | 2000465 | REG. FB PHOTO-COUPLER |
| ⚠ I905 | 2000465 | SHUTDOWN PHOTO COUPLER |
| ⚠ I906 | 2000465 | AC CLOCK PHOTO COUPLER |
| I908 | CP03923F | TV-9V REGULATOR |
| I909 | CP03922F | TV-5V REGULATOR |
| I910 | CP03921F | 3.3 V REGULATOR |
| I911 | CP03921F | D3.3 V REGULATOR |
| I914 | CP03922F | TV-5 V REGULATOR |
| IK01 | CP00571 | 5 V REGULATOR FOR DCU |
| IK03 | CP00571 | 5 V REG. FOR SRAM DCU |
| IK04 | CZ00431 | CONV. OUT (RH,RV, & GV) |
| IK05 | CZ00431 | CONV. OUT (GH, BH & BV) |
| IX01 | CP04712U | RAIN FOREST IC |
| Q001 | 2312171 | 5 V REGULATOR |
| Q007 | 2325691R | ON-OFF RELAY DRIVER |
| ⚠ Q777 | 2314002F | DEFLECTION OUTPUT |
| ⚠ QH01 | 2390851 | H.V. OUTPUT |
| ⚠ T752 | BT01231 | DEFLECTION OUTPUT TRANSF. |
| ⚠ TH01 | BW00633 | FLYBACK TRANSFORMER |
|  | CS00192 | 3DYC COMB F./ PIP UNIT |
|  | BY01221 | 53" & 60" YOKE ASSY. |
|  | EU04513 | 53" BLUE CRT ASSY. |
|  | UE04512 | 53" GREEN CRT ASSY. |
|  | KS02021 | 53" MIRROR ASSY. |
|  | UE04511 | 53" RED CRT ASSY. |
|  | KR01162 | 53" SCREEN ASSY. |
|  | H312184 | 53" SCREEN JIG HD MODE |
|  | H310359 | 53" SCREEN JIG NORMAL |
|  | KR01291 | 53" ULTRA SHIELD |
|  | UE04516 | 60" BLUE CRT ASSY. |
|  | UE04515 | 60" GREEN CRT ASSY. |
|  | KS00163 | 60" MIRROR ASSY. |
|  | UE04514 | 60" RED CRT ASSY. |
|  | KR00631 | 60" SCREEN ASSY. |
|  | H312181 | 60" SCREEN JIG HD MODE |
|  | H310355 | 60" SCREEN JIG NORMAL |
|  | HP00341 | ANTENNA SWITCH |
|  | HL00715 | CLU-615MP R/CONTROL |
|  | CS00222 | DCU ASSEMBLY |
|  | CS00185 | FLEX CONVERTER ASSY. |
|  | AZ00005 | FOCUS PACK ASSY |
|  | CALL TS | MAIN CHASSIS |
| U002 | HC00311 | MAIN TUNER |
| U003 | 2429691 | PIP TUNER |

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